

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AG 305 867 2468

For Release

Dick Young
305 867-2468

January 2, 1976
KSC 1-76

KSC TOUR OPERATION HAS THIRD BUSIEST YEAR

KENNEDY SPACE CENTER, Fla.--Heavy patronage of the guided bus tours of the nation's Spaceport during December brought the total for 1975 to 1,168,189, marking the third busiest year since the public tours were initiated in 1966.

The 1975 tour total is exceeded only by the 1,389,042 recorded in 1972 - the record year - and the 1,264,321 logged in 1973.

It reflects an increase of 32.9 percent over the 878,746 visitors recorded in 1974 when tourism slumped badly throughout Florida as a result of the energy crisis and the gasoline shortage.

December's tour patronage reached 114,017, an increase of 16.6 percent over the 97,748 taking the tours of KSC and adjacent Cape Canaveral Air Force Station in December, 1974.

Post-Christmas operations by NASA-TWA Tours were exceptionally heavy. During 1974, there was only one day of the six between Christmas and New Year's Day on which attendance exceeded 10,000. During the similar six-day period in 1975, there were four such days.

Sixty tour buses were in service during this period, enabling KSC to accommodate 11,902 visitors on December 29 and 11,567 on December 30, the two peak days.

P. A. Fagnant, Chief of KSC's Visitors Services Branch, predicted that the 1972 record of 1,389,042 will fall during the coming year, the 200th anniversary of the nation's birth.

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"We expect a substantial increase in the number of visitors of 1976 as a result of the Bicentennial Year," said Fagnant.

NASA has been named by President Ford as host for the Cape Canaveral Bicentennial Exposition on Science and Technology. This exposition will be held at KSC from late spring through early autumn on the theme "The third century of human progress under a free government."

All government agencies with an interest in science, as well as private industry, have been invited to participate.

Site of the exposition will be adjacent to the Vehicle Assembly Building at Launch Complex 39.

The figures on the bus tour operation do not reflect the total number of visitors to the Spaceport.

An estimated 20 percent of those coming to KSC to view the Visitors Information Center and its attractions do not take the bus tours.

This yardstick would place the total number of KSC visitors during 1975 in excess of 1.4 million.

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Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Iris Sullivan
305 867-2468

January 8, 1976
KSC 4-76

TITUSVILLE FIRM AWARDED KSC CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for \$939,800 to the Holloway Corporation, Route 2, Titusville, Fla.

The contract is for the architectural, mechanical and electrical modifications required to prepare the Launch Control Center at Complex 39 for the installation of the Space Shuttle Launch Processing System.

The work is being concentrated on the second floor and in Firing Rooms 1, 2 and 4 on the Launch Control Center's third floor.

Completion of the fixed price contract - one set aside for small business firms - is scheduled within 310 calendar days.

The modifications include the installation of fire protection and emergency power systems.

The new contract is the latest step in reshaping Saturn/Apollo Launch Complex 39 for the Space Shuttle era.

The Launch Processing System now under development by KSC will control and perform much of the Space Shuttle vehicle checkout automatically while the vehicle components are being processed for launch. It will also provide the capability for work order control and scheduling, and conduct countdown and launch operations.

Launch of the Space Shuttle on its first orbital flight from KSC is scheduled for 1979.

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National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867 2468

For Release

A. H. Lavender
305 867-2468

January 20, 1976
KSC 13-76

EXPOSITION EMPHASIS SHIFTS TO KSC

KENNEDY SPACE CENTER, Fla.--Having moved from the conceptual phase through planning and on to construction, emphasis on the Bicentennial Exposition on Science and Technology is shifting from Washington to the Kennedy Space Center.

Under the direction of General Manager Ed Simmons, what was just an idea a few months ago is now a firm plan with site construction already underway at the Spaceport.

Simmons is now returning to the Department of Commerce, where he was on loan to NASA to pull together the many elements of Government and industry needed to make the Exposition a reality.

"We now have an operational plan and are moving forward, confident that we will have a successful Exposition, thanks in large measure to the contributions of Mr. Simmons and his staff," NASA Administrator James Fletcher pointed out in a recent letter to Rogers Morton who had arranged for Simmons' temporary assignment to the Exposition.

"Our site plan calls for 15 geodesic domes which will house Government and industry exhibits," KSC Director Lee Scherer told Dr. Fletcher during a tour of the Exposition site last week.

The Exposition is scheduled to open on Memorial Day and close Labor Day. Visitors to the Center will be afforded the opportunity to tour the Cape in addition to visiting the Exposition which will be located next to the Vehicle Assembly Building. Portions of the VAB and adjacent Launch Control Center will be open to Exposition visitors.

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National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

February 10, 1976
KSC 37-76

KENNEDY SPACE CENTER ANNOUNCES REORGANIZATION

KENNEDY SPACE CENTER, Fla.--Realignment of the Kennedy Space Center organizational structure in preparation for Space Shuttle operations was announced today by Center Director Lee R. Scherer.

Eliminated in the realignment were the Installation Support Directorate and the Safety Office, with functions of those organizations reassigned.

Dr. Walter J. Kapryan, Director of Launch Operations since 1969, was named Director of Space Vehicle Operations in a move to restructure the Apollo/Saturn launch organization for Space Shuttle operations. John J. Williams, Director, Spacecraft Operations, in the Launch Operations Directorate since 1964, was named Kapryan's deputy.

Reporting to Kapryan will be Directors for Space Transportation System (STS) Processing, Shuttle Engineering, Shuttle Payloads and Expendable Vehicles, formerly Unmanned Launch Operations.

Paul C. Donnelly, formerly Associate Director for Operations, Launch Operations, was appointed Director for STS Processing. George T. Sasseen, formerly Chief, Engineering Division, Spacecraft Operations, was appointed Director for Shuttle Engineering. Isom A. Rigell, formerly Director, Launch Vehicle Operations, Launch Operations, was appointed Director for Shuttle Payloads.

George F. Page, who was appointed Director, Unmanned Launch Operations in October, 1975, has been designated Director, Expendable Vehicles.

Joseph F. Malaga, who was appointed Director of Administration in 1975, was appointed Director of Administration and Management Operations.

The Administration and Management Operations Directorate will retain the personnel, procurement, industrial and management engineering, space utilization, manpower, resources and financial management functions formerly assigned to the Administration Directorate and incorporate many functions formerly assigned to Installation Support and Center Resources Planning and Control.

Reporting to the Director of Administration and Management Operations will be Directors for Administrative Operations and Support Services, and Procurement, Supply and Transportation.

Named as Director, Administrative Operations and Support Services was Robert G. Long, formerly Chief, Center Resources Planning and Control. Functions assigned to the new directorate include management systems, resources and accounting systems, personnel, printing and reproduction, mail, library, graphics, publications, custodial services and grounds management, formerly Installation Support activities, and former Center Resources Planning and Control functions.

The Procurement, Supply and Transportation Directorate, headed by William M. Lohse, former Chief of the Administration Directorate's Procurement Office, incorporates former Installation Support functions of supply and procurement.

Appointed Associate Director, Reliability and Quality Assurance was John R. Atkins, former Director, Safety Office. The new organization will incorporate functions of the former Safety Office, the former Reliability and Quality Assurance Directorate, and Security and Fire and Rescue Services, formerly functions of Installation Support.

The Technical Support Directorate, headed by Peter A. Minderman, will assume most functions of Installation Support's Plant Engineering and Maintenance Division, including power coordination, utilities, engineering and operations, maintenance engineering, and test support management, plus photographic operations. John J. Neilon is Deputy Directorate of Technical Support.

John P. Claybourne was appointed Manager of the Sciences, Technology and Applications Office, retaining responsibilities formerly assigned to him in the now deactivated Sciences Applications, Skylab and ASTP Programs Office.

The Design Engineering Directorate, headed by Raymond L. Clark, and the Shuttle Projects Office under Dr. Robert H. Gray, were not affected by the reorganization.

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Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

February 2, 1976
KSC 38-76

JANUARY NASA TOURS VOLUME SETS RECORD

KENNEDY SPACE CENTER, Fla.--NASA Tours volume in January was at a record high level as 82,494 patrons purchased tickets for tours of the Spaceport and adjacent Cape Canaveral Air Force Station.

The month's total exceeded that of January, 1975, by 8,255, an increase of 11.1 percent. January, 1975, volume of 74,239 was a record for the first month of a year.

Expansion of Visitors Information Center facilities is underway to accommodate increasing numbers of tourists visiting the attraction and in preparation for the estimated one million who will visit the Spaceport during the Bicentennial Exposition on Science and Technology, scheduled from Memorial Day through Labor Day.

Work is almost complete on a new food services facility and a contract for construction of an additional 10,000-square foot exhibit building, to be completed prior to opening of the exposition, was awarded in January.

Visitor center attractions include displays and exhibits explaining the nation's space program, space science lectures and motion picture showings.

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For Release:

A. H. Lavender
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February 11, 1976
KSC 55-76

KSC EMPLOYEES RECEIVE NASA AWARDS FOR ROLES IN DELTA PROGRAM

KENNEDY SPACE CENTER, Fla.--Eight members of the Kennedy Space Center's Delta launch team were awarded medals by NASA Administrator Dr. James C. Fletcher and the KSC Delta Government-contractor team received the NASA Group Achievement Award in a ceremony at the Goddard Space Flight Center in Greenbelt, Maryland, today.

Receiving NASA's highest award, the Distinguished Service Medal, was John J. Neilon, Cocoa Beach, Director, Unmanned Launch Operations, from 1970 to 1975, and now Deputy Director of Technical Support.

A citation accompanying the medal stated, "Under his expert technical and managerial guidance, the directorate achieved some of its most challenging successes."

Wayne L. McCall, Titusville, Delta Launch Operations Division, Unmanned Launch Operations, was awarded NASA's Exceptional Service Medal. McCall was cited as "the top launch readiness expert and technical authority for Delta vehicle electrical, electronic, propulsion and mechanical systems. He has recently made particular contributions in the implementation of Delta pad modifications to accommodate the Straight Eight extended tank and the new Castor IV engine configuration."

An Exceptional Service Medal was awarded to Arthur J. Mackey, Jr., Cocoa Beach, Unmanned Launch Operations Project Engineering Office, who is responsible for operation of data laboratories, the Mission Director's Center and related systems that support prelaunch tests and launch operations. His citation stated that "he was a driving force in the development, installation and operation of much of the telemetry equipment used on the Delta program."

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A citation accompanying an Exceptional Service Medal presented to Mason R. Comer, Indian Harbor Beach, Special Assistant to the Director of Unmanned Launch Operations, stated he "is responsible for providing authoritative advisory services in connection with technical operations systems and equipment such as engine configurations, routing of harnesses, umbilical rigging, propellant loading systems, fairing integrity and failure analysis. His ability to recognize potential problem areas and recommend corrective action has been instrumental in the success of the Delta program."

James E. Towles, Titusville, Project Engineering Office, Unmanned Launch Operations, who received an Exceptional Service Medal, was recognized for serving "as project engineer during identification and implementation of all facility modifications and additions required for all Delta launches, thus contributing toward the success of Delta launches."

James C. Sweat, Merritt Island, Chief, Range Operations Branch, Unmanned Launch Operations, received an Exceptional Service Medal and a citation stating that he "forcefully applied his wealth of knowledge and experience in the development, direction and management of a responsive operations safety program for Delta activities at KSC. He has been particularly effective in providing direction to launch team members and obtaining concurrence of the Air Force Eastern Test Range Safety Staff in areas requiring interpretation of Air Force and NASA safety regulations. Mr. Sweat's dedication and leadership in the operations safety aspects of launches have resulted in minimizing or eliminating the cost in time and money impact of safety constraints, and have been an essential element contributing substantially to the success of the Delta program."

Henry J. Van Goey, Lompoc, California, Chief, Western Launch Operations Division, Unmanned Launch Operations, received an Exceptional Service Medal accompanied by a citation stating that "Mr. Van Goey is the prime representative for NASA and KSC at Vandenberg AFB. He has demonstrated an uncommon ability to organize, manage and coordinate an outstanding NASA-contractor team which has launched 30 Delta vehicles. He has proved particularly adept in negotiating interservice agreements with the Air Force for range support at the Western Test Range."

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Page 3
KSC 55-76

Richard B. Umlauf, Satellite Beach, Chief, Resources Requirements Branch, Technical Support, received an Exceptional Service Medal, with a citation recognizing "his contribution in the development of a cost structure for reimbursement of Department of Defense support to both commercial and U. S. Government satellites launched on Delta vehicles."

Accepting the Group Achievement Award for the Delta team was Mrs. Reggie Vietor, Titusville, secretary to the Chief, Unmanned Launch Operations.

The citation on the award stated that "this Government-industry team has compiled an enviable record of achievement, launching 120 Delta vehicles since 1960. The team concluded 1975 with a 100 percent success rate despite many obstacles brought about by design changes and short turnaround times between launches."

During the ceremony a NASA Exceptional Service Medal was presented to Robert Montgomery of the Air Force Eastern Test Range Range Safety Staff and a NASA Public Service Award to Dale Steffey, McDonnell Douglas Aircraft Co., for their roles in the Delta program.

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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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A. H. Lavender
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February 26, 1976
KSC 78-76

Also Released by NASA Headquarters

NOTICE TO EDITORS/NEWS DIRECTORS

VIKING MARS MISSION NEWS BRIEFING TO BE HELD IN MIAMI

KENNEDY SPACE CENTER, Fla.--There will be a news briefing on the NASA Viking mission to Mars in Miami, Fla., Thursday, March 11. The briefing will be held at 10:30 a.m., EST, at the Miami Airport Inn, N.W. LeJeune Road (42nd Avenue), one-half mile south of the Miami Airport terminal entrance.

Present at the briefing will be Dr. Gerald Soffen, Viking Project Scientist; William Boyer, Viking Project Office; and Maurice Parker, Viking Project Public Affairs Officer, NASA Langley Research Center, Hampton, Va.

The Viking information team will have press packets, including visuals, and film clips.

Viking-1 Mars Orbit insertion is scheduled for June 19 with the Lander descent scheduled for July 4.

One-on-one interviews with Dr. Soffen and Mr. Boyer will be available after the briefing and Q & A period, time permitting.

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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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A. H. Lavender
305 867-2468

For Release:
March 1, 1976
KSC 83-76

FEBRUARY NASA TOURS VOLUME SET RECORD

KENNEDY SPACE CENTER, Fla.--More than 112,000 visitors took guided bus tours of the Spaceport in February, marking the second consecutive month that patronage exceeded the 1975 level.

Tour patronage of 112,157 in February compares with 102,217 during February, 1975.

January tour patronage of 82,494 was also a record, and tour volume for the first two months of 1976 was over 10 percent above that for the first two months of 1975. January, 1975, volume was 176,456.

Tours of the Spaceport and adjacent Cape Canaveral Air Force Station originate at the Visitors Information Center. The visitor center is accessible from U. S. 1, south of Titusville, via State Road 405 and the NASA Parkway, and from Merritt Island via State Road 3 and the NASA Parkway.

Visitors Information Center attractions--available at no cost to the public--include exhibits, displays, motion pictures and space science lectures explaining the nation's space program.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
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For Release

Dick Young
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March 9, 1976
KSC 96-76

BICENTENNIAL EXPOSITION GIVEN DISTINCTIVE SYMBOL

KENNEDY SPACE CENTER, Fla.--The Bicentennial Exposition on Science and Technology - "Third Century America" - has been given a distinctive symbol or "logo" as preparations are being pushed ahead for its opening on May 30.

The fifth of 15 geodesic exhibit domes going up in the shadow of the Vehicle Assembly Building where Saturn V/ Apollo space vehicles were groomed for voyages to the Moon was erected recently and the domes' distinctive shape is an integral part of the logo.

The logo - to be used on all exposition facilities and publicity material - depicts a person with outstretched arms reaching and looking into the future. The lines in the bottom half represent a vision stretching into infinity. At the top is the geodesic dome structure created by the joining of triangles.

In the full color version, the outline of the person is in red and the lines to infinity are in red and blue. The triangles forming the dome are in blue. The background is white.

"Third Century America", the only exposition to be sponsored by the United States government during the Bicentennial Year, will be held at the Kennedy Space Center from May 30 through Labor Day.

Participating to give visitors a glimpse into the future through the exhibits to be housed in and around the domes will be fifteen Federal agencies and approximately a dozen industrial firms.

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Agencies participating include the Department of Health, Education and Welfare; Treasury Department; Energy Research and Development Administration; American Revolution Bicentennial Administration; Environmental Protection Agency; National Endowment for the Arts; Department of Defense; Department of Housing and Urban Development; Department of Interior; National Science Foundation; Community Services Administration; Department of Agriculture; Department of Commerce; the U.S. Postal Service and the Department of Transportation.

NASA's John F. Kennedy Space Center, located midway down the east coast of Florida, will play host to "Third Century America" and offer a wide variety of exhibits on the nation's space program.

Some of the nation's most prestigious industrial firms with wide credits in aerospace and other highly technical fields will be among the exhibitors.

The geodesic domes in which the exhibits will be housed are located to the south of the Vehicle Assembly Building at KSC's Launch Complex 39. Five of the domes - 120 feet in diameter and 30 feet high in the center - have already been erected. The remainder will be in place by mid-April.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

March 23, 1976
KSC 109-76

A. H. Lavender
305 867-2468

VIRGINIA COMPANY SELECTED FOR CONTRACT NEGOTIATIONS

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has selected the Bionetics Corporation, 18 Research Drive, Hampton, Va., for negotiations leading to a contract to provide standards and calibration support services over a three-year period.

The standards and calibration support contract, a small business set-aside, is for services now provided under the Center's contract with the Federal Electric Corporation for launch communications and instrumentation. Amount of the contract will be in excess of \$500,000 annually.

The Bionetics Corporation was one of ten companies submitting proposals in response to a Request for Proposal released August 20, 1975. The other companies were Atlantic Technical Services Corp., Casselberry, Fla.; CommTech Services, Inc., Tampa, Fla.; NEMCO, Inc., Kensington, Md.; New World Services, Inc., Titusville, Fla.; A. C. Notary Co., Titusville, Fla.; Precision Fabricating and Cleaning, Inc., Sharpes, Fla.; Rothe Development, Inc., San Antonio, Tex.; Symetrics Industries, Inc., Indian Harbor Beach, Fla.; and Texas Aerospace Services, Inc., Abilene, Tex.

The Kennedy Space Center is the nation's primary launch organization for manned and unmanned space missions. Launch operations for unmanned space missions are conducted at Cape Canaveral Air Force Station in Florida and the Western Test Range in California. The Center's Complex 39, launch site of Apollo manned lunar landing, Skylab and Apollo Soyuz Test Project missions, is now undergoing modifications in preparation for Space Shuttle launch and landing operations, with the first Space Shuttle launch scheduled in 1979.

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National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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A. H. Lavender
305 867-2468

For Release:
March 25, 1976
KSC 110-76

TWA SERVICES AWARDED BICENTENNIAL EXPOSITION CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$1,848,265 contract to TWA Services, Inc., to manage the Center's construction program in preparation for the Bicentennial Exposition on Science and Technology.

The cost plus fixed fee contract also provides for possible additional construction commitments of \$148,735, and other options, if required, totaling \$495,000.

Under terms of the contract, TWA Services will award sub-contracts and manage site preparation, construction of buildings, parking areas and other facilities; installation of utilities and dismantling of facilities at the end of the exposition.

The contract action definitizes a letter contract initiated on January 12, 1976 with TWA Services, the Center's concessionaire for operation of NASA Tours and the Visitors Information Center.

The Kennedy Space Center is host to the Government-sponsored Bicentennial Exposition, which will be open daily from May 30 through Labor Day.

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National Aeronautics and
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John F. Kennedy Space Center
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For Release:

A. H. Lavender
305 867-2468

March 30, 1976
KSC 111-76

MC GREGOR & WERNER AWARDED TWO-MONTH CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a two-month, \$246,696 extension of a contract for reproduction services to McGregor & Werner, Inc., 5411 Chillum Place NW, Washington, D. C.

The extension covers the period April 1, 1976 through May 31, 1976. This is the second extension to the basic contract, which was awarded on April 1, 1974, and brings the total value of the contract to \$3,474,247.

The contract is for printing, reproduction and microfilming/documentation services. The contract is a set-aside for small business concerns.

The Kennedy Space Center will be the site of Space Shuttle launches and landings, with the first launch scheduled in 1979.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

April 2, 1976
KSC 114-76

NASA TOURS VOLUME REMAINED HIGH IN MARCH

KENNEDY SPACE CENTER, Fla.--Excursions through the Spaceport and adjacent Cape Canaveral Air Force Station remained one of Florida's most popular tourist attractions in March as more than 118,000 visitors purchased NASA Tours tickets.

March volume of 118,211 brought the 1976 three-month total to 312,862, approximately 10,000 less than the record first three months of 1975. During March, 1975, a record month, 146,940 purchased tour tickets. The 1975 three-month total was 323,396.

"March, 1976, volume was considerably lower than last year's, but the March, 1975, record was achieved as a result of Easter vacation visitors. Easter is in mid-April this year, thus April visitor volume should be high and I anticipate 1976 totals for the first four months of the year will approach or exceed our all-time record," said P. A. Fagnant, Chief of KSC's Visitor Services Branch.

Easter was on March 31 in 1975 and will occur on April 18 this year.

Tours originate at the Spaceport's Visitors Information Center, where space vehicle hardware, exhibits, displays, movies and science lectures explaining the U. S. space program are provided at no cost to the public.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

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For Release:

Dick Young
305 867-2468

May 3, 1976
KSC 161-76

NASA TOUR VOLUME REMAINS AT HIGH LEVELS

KENNEDY SPACE CENTER, Fla.--Guided bus tours of the nation's Spaceport and adjacent Cape Canaveral Air Force Station had 107,540 patrons during April, more than 6,000 higher than the corresponding month one year ago.

The April, 1976, tour total was 6.1 percent ahead of the 101,339 volume of April, 1975, and brought total patronage for 1976 to 420,402.

Visitor volume for the first four months of 1975 was 424,735, one percent ahead of that of the current year.

A substantial portion of the April patronage came during the Easter holiday season and on no day between April 12 and April 23 did tour volume sink below 3,000 visitors.

A peak day of 6,343 was recorded on April 14.

Tours originate at the Spaceport's Visitors Information Center accessible via the NASA Causeway off U. S. Route 1 two miles south of Titusville and State Road 3 on Merritt Island.

Space Vehicle hardware exhibits, a diversity of static and dynamic displays, movies and science lectures explaining U. S. space programs are provided at the VIC at no cost to the public. Guided bus tours are available for a nominal fee.

The number of visitors taking the guided bus tours of KSC and the adjacent Air Force facility since they were initiated in 1966 stands at approximately 9.7 million.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Darleen Hunt
305 867-2468

May 27, 1976
188-76

SUNDAY DRIVE-THROUGH TOURS OF KSC SUSPENDED DURING SUMMER

KENNEDY SPACE CENTER, Fla.--Sunday drive-through tours of the Kennedy Space Center will be suspended for the summer effective, Sunday, May 30.

The public will be permitted direct access to the U. S. Bicentennial Exposition site in the Launch Complex 39 area, but all other areas will be off limits for the duration of the Exposition which runs through September 7.

Drive-through tours of the Cape Canaveral Air Force Station and access to the Air Force Space Museum via Gate 1, will also be suspended May 30 but will resume June 6 and continue through the summer.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AG 305 867 2468

For Release:

Samuel F. Hayes
305 867-2468

June 4, 1976
KSC 198-76

KENTUCKY STATE UNIVERSITY AWARDED KSC GRANT EXTENSION

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$40,214 12-month extension of a grant to Kentucky State University, Frankfort, Kentucky, to continue study of the effects of various oxygen atmospheres on animals.

The vinegar fly, *drosophila melanogaster*, which has been grown and tested under 5%, 20% and 60% oxygen concentration, is the animal under study. The normal oxygen content of the earth's atmosphere is 21%.

Over the past two years Kentucky State studies have shown that for up to 20 days the vinegar flies living in a 60% oxygen environment had a survival rate similar to the vinegar flies living in 20% oxygen. After 20 days the vinegar flies exposed to a 60% oxygen atmosphere died.

At the 5% and 20% oxygen content levels, the survival rates of the initial generation of the vinegar flies were the same. Tissue studies of the vinegar flies indicated that exposure to a 60% oxygen environment caused physical changes, including accelerated aging and nervous system problems.

Under this extension the researchers will concentrate their studies on the mortality, fertility and gene frequencies of the vinegar fly over 10 or more generations.

Additional data on survival rates, reproductive potential and genetic changes of the vinegar fly may aid in establishment of improved oxygen content in manned spacecraft atmospheres during future manned missions, and in the selection of humans to participate in manned space missions and deep-sea dives.

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Page 2
KSC 198-76

This extension, awarded May 1, 1976, brings the total grant value to \$98,940. The basic grant, awarded May 1, 1974, was for \$37,210, and the first extension, awarded May 1, 1975, was for \$21,516.

The launch of the first reuseable Space Shuttle, the next U. S. manned space flight, is scheduled in 1979. The Kennedy Space Center will be the primary launch and landing site for the Space Shuttle.

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For Release:

A. H. Lavender
305 867-2468

June 3, 1976
KSC 201-76

SPACEPORT CONTRACT AWARDED TO MANAGEMENT SERVICES INCORPORATED

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$1,105,930 contract to Management Services Incorporated, Huntsville, Ala., for operation of component refurbishment and chemical laboratories.

The one-year cost-plus-award fee contract, extending from June 1, 1976, through May 31, 1977, provides for the Huntsville, Ala., firm to provide qualified technical and administrative personnel on a specified level of effort basis to operate the laboratories.

The Kennedy Space Center conducts unmanned science and applications launches from complexes at Cape Canaveral Air Force Station and the Western Test Range, Lompoc, California, and is modifying Spaceport facilities for Shuttle launch and landing operations. The first Space Shuttle launch is scheduled in 1979.

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A. H. Lavender
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June 3, 1976
KSC 202-76

KENNEDY SPACE CENTER EXTENDS BOEING CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$14,944,594 contract extension to the Boeing Company's Field Operations and Support Division for continuance of support of NASA operations at the Spaceport and Cape Canaveral Air Force Station.

The cost plus fixed fee contract extension, for the period from June 1, 1976 through January 31, 1977, provides for Boeing support in the areas of test support management, plant engineering and maintenance, supply and transportation operations, documentation, fire prevention and protection, rescue services, quality assurance, security and training. The extension brings the total value of the Boeing contract for the period March 1, 1971, through January 31, 1977, to \$145,568,963.

The contract also provides for one-month extension options for February, March, and April, 1977, in the maximum amount of \$5,902,714.

The Kennedy Space Center launches unmanned scientific and applications space vehicles from complexes at Cape Canaveral and the Western Test Range, Lompoc, Calif., and is modifying facilities at the Spaceport for Space Shuttle launch and landing operations. The first Space Shuttle launch is scheduled in 1979.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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Samuel F. Hayes
305 867-3200

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June 18, 1976
KSC 240-76

KSC AWARDED AIR CONDITION CONTRACT TO CINCINNATI FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$1,240,000 contract to Ellis and Watts Company, Cincinnati, Ohio, to build four air conditioning units.

The air conditioning units will be used to purge the Space Shuttle Orbiter of any contamination that might have occurred during its re-entry into the earth's atmosphere, to maintain the required positive pressure inside the Orbiter during its re-processing cycle and to cool the Orbiter after it lands.

Each unit will be 32 feet long, 9 feet wide, 10 feet high and will weight 20,000 pounds. Each unit will have a cooling capacity of 100 tons.

Immediately after the Orbiter lands at Kennedy Space Center's 15,000-foot-long, 300-foot-wide Shuttle runway, the first air conditioning unit will be plugged into it. This unit will accompany the Orbiter from the runway to the Orbiter Processing Facility, where a second unit will be plugged into the Orbiter. The Orbiter Processing Facility, presently under construction, will serve as a safing, service and maintenance facility for the Orbiter.

The first unit will be replugged into the Orbiter when it leaves the Orbiter Processing Facility enroute to the Vehicle Assembly Building. At the Vehicle Assembly Building the Orbiter will be mated, aboard the Mobile Launcher Platform, with two solid rocket boosters and a large liquid fuel tank.

A third unit will be plugged into the Orbiter inside the Vehicle Assembly Building. This unit will remain with the Orbiter until it reaches launch pad 39-A. At the launch pad the Environmental Control System will maintain the necessary positive pressure inside the Orbiter.

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Page 2

The fourth unit will be shared between Palmdale, California, where the Orbiter will be assembled, and Edwards Air Force Base, Edwards, California, the secondary landing site for the reusable Space Shuttle. At Palmdale, the unit will be used for manufacturing check-out of the Orbiter.

This fixed price contract covers a one and a half year period.

The Kennedy Space Center will be the primary launch and landing site of the Space Shuttle. The first launch of the Shuttle is scheduled for 1979.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

A. H. Lavender
305 867-2468

June 25, 1976
KSC 278-76

NOTICE TO EDITORS/NEWS DIRECTORS

NEWS CONFERENCE ON THUNDERSTORM RESEARCH SCHEDULED AT SPACEPORT

KENNEDY SPACE CENTER, Fla.--A Thunderstorm Research Program, history's most highly concentrated effort by meteorological scientists to increase man's knowledge of electrical charges in cumulo-nimbus clouds, lightning and thunderstorm dynamics is scheduled at the Kennedy Space Center this summer.

The attached news release provides information on the program.

A news conference on the Thunderstorm Research Program, followed by a question and answer session with principal investigators participating, is scheduled at KSC June 29.

Following the news conference, interested news media representatives will have an opportunity to join a field trip to view instrumentation at some of the experiment sites.

Those desiring to attend the news conference should reach the Bicentennial News Center at 3rd Century America prior to 10:00 a.m. All will be escorted to the news conference.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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A. H. Lavender
305 867-2468

June 25, 1976
KSC 279-76

SCIENTISTS STUDY THUNDERSTORMS AT NATION'S SPACEPORT

KENNEDY SPACE CENTER, Fla.--From Kennedy Space Center vantage points where thousands watched as Apollo/Saturn space vehicles began missions to the Moon, electronic eyes are looking skyward in history's most highly concentrated study of thunderstorms.

Meteorological and electronics scientists from throughout the United States and from abroad have converged on the Spaceport for a summer of observation and study of phenomena that cause electrical charges in cumulo-nimbus cloud formations and electrical discharges within and between clouds and to the Earth's surface in the Thunderstorm Research Program.

An earlier program in 1948 studied the dynamics of thunderstorms. This effort is directed at electrical characteristics.

Interested in obtaining more information on thunderstorms and the hazards they provide to launch operations--the incidence of thunderstorms in Florida is high during the summer months--Kennedy Space Center management invited the scientific community to utilize the Spaceport and its resources for the research program.

The invitation was accepted by the American Geophysical Union and the American Meteorological Society, and a Secretariat of Dr. Lothar H. Ruhnke of the Naval Research Laboratory and Dr. E. T. Pierce of NOAA's Severe Storm Laboratory outlined goals and disseminated invitations to scientists to participate.

The result is a broad program of research projects to expand man's understanding of thunderstorm phenomena. Ever since Benjamin Franklin postulated and proved that electricity is produced in thunderstorms, scientists have tried to understand the mechanism by which electricity is generated in clouds and the mechanism which leads to the formation of lightning. This bicentennial problem will be addressed anew using modern research technology and our country's most expert scientists.

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Nineteen principal investigators with their associates, representing many of the nation's leading research organizations as well as a number of U. S. universities and the University of Manchester, England, are involved in the program, beginning this summer and continuing during the summers of 1977 and 1978. A total of over 70 scientist are currently assisting in local experiments. Many are graduate students.

Experiments utilize instruments brought to KSC by participating scientists--ground systems, instrumented aircraft and tethered and free flying balloons that will probe the cloud formations.

The scientists will also employ many KSC instrumentation systems, including the electric field measuring (field mill) system, developed for detection of the buildup of electrical charges in thunderclouds that might interfere with space vehicle launch operations; NASA-6, the Center's instrumented aircraft that has been used in previous lightning studies; the lightning detection and ranging system; weather radars; the storm detection meteorological radar set, including camera and digitized automatic radar tracking systems; the Cape launch pad lightning warning system; a weather information network display (WIND) system; a satellite imagery acquisition system with equipment for processing weather satellite pictures; an automatic picture transmission (APT) recording system and timing and camera systems.

Services of the National Atmospheric and Oceanic Administration National Weather Service office at KSC and the Air Force Weather Service office at Cape Canaveral Air Force Station will be available to the researchers.

Experiments include field measurements of intracloud electrical discharges, recording of electrical impulses at multiple stations to identify discharges within a cloud, study of precipitation formation and development in thunderclouds, study of lightning behavior around tall structures, determination of charge and electric field distributions in developing clouds, study of electrical properties and air motions in thunderstorm anvil clouds, location of lightning charge centers, photographic recording of lightning structure measurements.

Location of major lightning channels inside and outside cloud formations, recording of vertical profiles through the updraft regions of cumulo-nimbus clouds, obtaining of data on electric fields within clouds, measurement of return-stroke current wave shapes and velocities, observation of the evolution of lightning activity in clouds, determination of atmospheric radio noise in the high frequency and very high frequency bands,

characterization of thunderstorm activity over the ocean and development of techniques for obtaining time lapse photographs of cloud behavior, including lightning charges as they occur.

Organizations participating in the project and principal investigators are as follows:

NOAA Environmental Research Laboratory (2 projects),
Dr. Heinz Kasemir and Dr. William L. Taylor.

New Mexico Institute of Mining and Technology (2 projects),
Dr. Marx Brook and Professor Charles B. Moore.

Rice University, Dr. Arthur A. Few.

University of Florida, Dr. Martin A. Uman.

South Dakota School of Mines and Technology, Dr. Harold
D. Orville.

State University of New York at Albany (2 projects),
Dr. Richard E. Orville and Dr. Bernard Vonnegut.

University of Arizona, Dr. E. Philip Krider.

Naval Research Laboratory (2 projects), Dr. Luther H.
Ruhnke and Robert V. Anderson.

University of Miami (2 projects), Dr. Robert M. Lhermitte
and Dr. H. W. Hiser.

University of Manchester, England, Professor John Latham.

Atlantic Science Corporation, Dr. Rodney B. Bent.

Massachussetts Insititute of Technology, Dr. Ralph Markson.

NASA Goddard Space Flight Center, Dr. David M. Levine.

NASA Johnson Space Center, Donald D. Arabian.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Darleen Hunt
305 867-2468

July 28, 1976
KSC 376-76

MAE WALTERHOUSE GIVEN NASA HEADQUARTERS ASSIGNMENT AND ELECTED AS NATIONAL PRESIDENT OF FEW

KENNEDY SPACE CENTER, Fla.--Mae Walterhouse, KSC Federal Women's Program Coordinator, has been accepted to participate in the 1976-77 Career Development Program at NASA Headquarters in Washington, D.C. She has also been elected as national President of Federally Employed Woman, Inc. (FEW), and was presented the Barbara B. Tennant Award, which is presented for distinguished service to the FEW organization.

She will report to NASA Headquarters on September 7 for one years experience under the Career Development Program in the Office of Resources Management.

Objectives of the program are:

- * To assist Centers in developing potential supervisors and managers at all levels of management throughout the agency.
- * To foster better appreciation and understanding of Headquarters functions and operations on the part of Center personnel.
- * To provide additional training and development in specific discipline or functional areas.

Walterhouse was elected national FEW President at a recent convention she attended in San Francisco at which 1300 attendees were present. FEW is an organization for opportunity and equality for women in government. She has been extremely active in the FEW organization since 1970 when she became a charter member of the Space Coast Chapter. Because of her interest and dedication to the enhancement of women's status on the job and in the community, she subsequently became: First Vice President, FEW, Space Coast Chapter in FY 1972; President, Space Coast Chapter, FY 1973; Chairperson, National FEW Elections Committee, FY 1973; Chairperson, National FEW Nominating Committee, FY 1974; Regional Coordinator for Atlanta Region of FEW, FY 1974-75; First Vice President, National FEW, FY 1976; and now National President, FY 1977. She is currently a member of the

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National Women's Political Caucus, National Organization for Women and the American Civil Liberties Union.

At this summer's FEW convention, she was awarded the Barbara B. Tennant Award, which is presented for distinguished service to the FEW organization. The citation reads:

Federally Employed Women, Inc. presents the Barbara B. Tennant Award to Mae W. Walterhouse for her consistent and tireless efforts in expanding membership, developing new chapters, motivating and inspiring women to recognize their own potential, stimulating management awareness of the problems women face in achieving their career goals and designing innovative training programs to facilitate upward mobility for women. A prolific writer and articulate spokesperson she has served the members beyond the call of duty as a chapter vice president, president, regional coordinator and national first vice president. In each role she continuously demonstrated her total commitment to the goals and purposes of FEW. Signed: Janice Mendenhall President, FEW.

Being located in Washington will tie in very well with her new duty as FEW President since a majority of her committee heads and contacts will be in that area.

When questioned about her career goals, Walterhouse quickly replied "I have several goals, A, B, C, and D. Goals are not new to me, I've always had them."

Her "reentry" plans after her one year's Career Development Program are to return to KSC and join the Administration Directorate headed by Joseph Malaga.

Mae Walterhouse is married to Harry F., a retired Army Officer, who taught school at Cocoa Beach High School for 10 years. They plan to maintain residences both in the Washington, D. C. area and Cocoa Beach.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

August 4, 1976

RELEASE NO: 391-76

INDIANA RESIDENT HONORED AS 10-MILLIONTH NASA TOURS PATRON

KENNEDY SPACE CENTER, Fla.--Hanover, Indiana, resident David Perry became the 10-millionth visitor to purchase a ticket for a guided bus tour of the Spaceport today.

Vacationing in Florida with his wife and children, Rick, 16, and Gwen, 10, Perry was greeted at the Kennedy Space Center's Visitors Information Center by NASA and TWA Services, Inc., officials. TWA Services, a subsidiary of the Canteen Corp., is the Center's concessionaire for operation of the visitor center and NASA Tours.

Escorted to the KSC Headquarters Building by Robert Newman, NASA Assistant Administrator for Public Affairs and KSC public affairs chief Charles T. Hollinshead, Perry and his family were welcomed by Center Director Lee R. Scherer, who presented them an autographed space center photo and tickets to 3rd Century America, the nation's Bicentennial Exposition on Science and Technology, hosted throughout this summer by the Kennedy Space Center.

Following a VIP tour of the Spaceport and adjacent Cape Canaveral Air Force Station, the Perrys spent the night at a Cocoa Beach motel, compliments of TWA Services.

Tomorrow's schedule includes a visit to 3rd Century America and a dinner at a Cocoa Beach restaurant hosted by Harry B. Chambers, general manager of TWA Services' Kennedy Space Center Tours, honoring the Perrys and eight TWA employees who have completed 10 years of service with the company.

Perry, whose address is Route 2, Hanover, Indiana, is a welder at the Rex Nord Factory, Madison, Ind. Mrs. Perry is a secretary at the Production Credit Association, Madison.

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NASA Tours registered the 10-millionth patron little more than 10 years after the visitor program was established. The tour program was initiated July 22, 1966.

The Visitors Information Center, featuring displays and exhibits on space exploration, aeronautical and space science lectures/demonstrations, and showings of space movies, was opened August 1, 1967. A new Hall of History, adjacent to the visitor center, where exhibits and space vehicle models outline the accomplishments of the nation's space program since the launch of the first U. S. spacecraft, Explorer I, on January 31, 1968, was opened in June.

The 10-million bus tour patrons are only a portion of the KSC visitor influx. Frequent surveys of visitors at the VIC indicate that approximately one-fourth of those who enjoy the space exhibits, movies and lectures do not take a tour. Thus, the number of visitors since 1966 actually exceeds 12 million.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Dick Young
305-867-2468

September 30, 1976

RELEASE NO: KSC-447-76

NOTICE TO EDITORS/NEWS DIRECTORS

KENNEDY SPACE CENTER TO HOST PRESS FOR SHUTTLE BRIEFINGS/TOUR

KENNEDY SPACE CENTER, FLA.--The Space Shuttle is the key element of the space transportation system which will open a new era of routine and economical access to space.

The opening of that new era is imminent.

The first of the Space Shuttle Orbiters - the "Enterprise" - was recently rolled out of the Rockwell International Plant at Palmdale, California, and will begin flight testing in the coming year at NASA's Dryden Flight Research Center, Edwards AFB, California.

The second orbiter - as yet unnamed - is now undergoing assembly and is to be delivered to the Kennedy Space Center in the summer of 1978.

Its first manned orbital flight is scheduled for launch from KSC in the spring of 1979.

The Space Shuttle and the transportation system of which it is an integral part, as well as Shuttle operations at KSC, will be outlined in a comprehensive press briefing and tour to be held here on Thursday, October 14.

The briefings by key KSC personnel will be held in the Fourth Floor Conference Room in the KSC Headquarters Building from 9 a.m. until noon. After lunch, members of the press will be taken on a tour of the Complex 39 and Industrial Area facilities being reshaped for their roles in the Shuttle Era.

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The briefings and tour have been scheduled to coincide with the launch of Marisat-C on the same day. The day's activities will be concluded at 3:30 p.m. to give the press the opportunity to cover the Marisat launch during a window which opens at 6:33 p.m. EDT.

Briefing topics include a Shuttle program overview, KSC Shuttle operations, KSC Shuttle facilities, the Launch Processing System and the Spacelab being built by the European Space Agency for flight aboard the Shuttle orbiter.

The briefings will be accompanied by short films demonstrating the steep orbiter landing profile, Spacelab operations and the rollout of the first orbiter at Palmdale on September 17.

The afternoon tour will include the Orbiter Landing Facility, the Orbiter Processing Facility, the Vehicle Assembly Building and Launch Control Center, a Mobile Launcher Platform and Complex 39's Pad A in the Shuttle launch configuration.

There will also be demonstrations of the sophisticated new Launch Processing System which will be used to permit Space Shuttle launches as often as every two weeks.

The briefings and tour will be invaluable for any member of the media seriously planning to cover Space Shuttle operations at Kennedy Space Center. Reference material will be distributed which the press should find extremely useful in their shuttle coverage as we get closer to the beginning of operations.

KSC access on October 14 may be obtained by the following methods:

1. Members of the media may pick up bus transportation to KSC at Frank Wolfe's Beachside Motel in Cocoa Beach no later than 8:15 a.m. EDT. They will be returned there after the day's activities in ample time to make contact with Air Force Eastern Test Range personnel and obtain credentials to cover the Marisat-C launch.

2. Clearance to the Headquarters Building may be obtained at Pass and Identification Gate 3 on the NASA Causeway just off U. S. Route 1 two miles south of Titusville. News personnel who plan to enter by this method should report to the Pass and Identification Building no later than 8:30 a.m. in order that they may reach the KSC News Center at Room 1207 in the Headquarters Building no later than 8:50 a.m.

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3. News personnel with permanent press badges may proceed directly to the Headquarters Building News Center.

In order that we may make plans to accommodate all who wish to attend this event, please return the enclosed Response Form to Public Information Office, John F. Kennedy Space Center, NASA, Kennedy Space Center, Fla. 32899, Mail Code: PA-PIB.

News organizations are not limited in the number of persons they wish to accredit but should list the names of those they expect to attend on the enclosed Response Form.

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RESPONSE FORM

SPACE SHUTTLE PRESS BRIEFING AND TOUR

KENNEDY SPACE CENTER, FLA.

October 14, 1976

Please put us down to attend. Our organization, _____
_____, will be sending the following personnel to
attend this event.

We will (cover) (not cover) the launch of Marisat-C. (Please check one)

We will:

☐

Meet the bus at Cocoa Beach.

☐

Obtain credentials at Gate 3 and drive to the
Headquarters Building News Center.

Title

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

A. H. Lavender
305 867-2468

October 1, 1976

RELEASE NO: KSC 448-76

SPACEPORT TOURS INCREASE IN SEPTEMBER

KENNEDY SPACE CENTER, FLA.--Guided bus tours of NASA's Spaceport and adjacent Cape Canaveral Air Force Station were taken by 42,734 visitors during September, an increase of 20.8 percent over the 35,382 taking the tours during the same month in 1975.

The September patronage brought the tour totals for the first nine months of 1975 to 935,550, 2.7 percent below the cumulative total of 961,811 for the same period one year ago.

The tour total for the year appears certain to reach the 1 million mark.

Public bus tours of KSC were initiated in 1966 and have surpassed one million every year since 1968 with the exception of 1974, when patronage slumped to 878,746 as a result of the energy crisis and the gasoline shortage.

The record attendance of 1,389,042 was recorded in 1972 and the second highest mark was 1,264,321 in 1973. The 1975 tour total of 1,168,189 was the third highest on record.

The 10 millionth visitor since tours were initiated in 1966 was logged in August.

Guided bus tours are operated every day of the year with the exception of Christmas and originate at the Visitors Center which is accessible via the NASA Causeway from U. S. Route 1 two miles south of Titusville and State Road 3 on Merritt Island.

The Visitors Center is open without charge and provides a wide variety of exhibits on space exploration, and daily programs of space movies and space science lectures and demonstrations.

A new attraction at the Visitors Center is the Hall of History with its vast array of exhibits on manned and unmanned space programs of the past.

Bus tours are offered for a nominal fee.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

A. H. Lavender
305 867-2468

For Release:
November 4, 1976

RELEASE NO: KSC 481-76

EMPLOYEES, GROUPS, CONTRACTORS RECEIVE NASA AWARDS

KENNEDY SPACE CENTER, Fla.--Five Kennedy Space Center employees, two KSC groups and three contractors received NASA awards during a NASA Headquarters ceremony in Washington today. The awards were presented by NASA Administrator Dr. James C. Fletcher.

William M. Lohse, North Indian River Drive, Cocoa, KSC's Director, Procurement, Supply and Transportation, received the Distinguished Service Medal, NASA's highest award. He was cited for "exceptional contributions to KSC and NASA in providing outstanding management of all Shuttle Program contracting requirements at the Center, his resolution of Bicentennial Exposition contracting problems and his exceptional contributions in overall Center administrative management matters."

Receiving NASA's Exceptional Service Medal were James F. (Frank) Burke, Wesley H. Dean and Darrow L. Webb.

Burke, of 115 Carrigan Lane, Merritt Island, is Chief of the Management Support Office, Design Engineering. He was honored for his leadership in the management of the directorate's resources.

Dean, of 217 Robinhood Avenue, Titusville, is Chief of the Cost and Pricing Staff of the KSC Procurement Office. He was cited for his contributions to the formulation of NASA policy in the areas of cost and pricing of procurement actions.

Webb, of 630 Aloha Lane, Cocoa, is project engineer for KSC's Shuttle Launch Processing System solid rocket booster system. The award was in recognition of his role in the technical integration of Launch Processing System hardware and software.

Fernando Esparza, 540 4th Avenue, Satellite Beach, received NASA's Equal Employment Opportunity Award in recognition of his role in KSC's recruitment of minority personnel. He is a supervisory mathematician in the Engineering Applications Branch of KSC's Information Systems Directorate and also serves as the Center's Spanish Speaking Program Coordinator.

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The Radio Frequency Operations Section of the Telemetric Systems Division, Information Systems, was presented a NASA Group Achievement Award. The group was cited for "outstanding technical achievements in providing payload and booster off-the-air data link quality measurements and launch related in-flight telemetry data acquisition to the Expendable Vehicle Directorate's mission operations." Supervisor Raymond N. Summy, Jr., Titusville, accepted the award.

A NASA Group Achievement Award was also presented to the Visitors Information Center Support Unit of the Laboratories Branch, Support Operations. The award cited continuous and dedicated effort insuring that exhibits in the visitors center are maintained in a manner reflecting credit on KSC. Supervisor Bernard W. Torrence, Merritt Island, accepted the award.

Stearns-Roger, Inc., Denver, Colo., an Air Force contractor, was presented a NASA Public Service Group Achievement Award for its accomplishments in restoring Complex 41, Cape Canaveral, following fire damage resulting from the second Viking launch to meet the deadline for the launch of Helios-B on January 15, 1976.

Greiner Engineering Sciences, Inc., Tampa, Fla., KSC's architect-engineer contractor for Phase I of the Shuttle Orbiter Landing Facility, received a NASA Public Service Group Achievement Award recognizing the company's performance in development of the design package and expertise in construction inspection and engineering services.

Morrison-Knudsen Company, Inc., Darien, Conn., KSC's construction contractor for Phase I of the Orbiter Landing Facility, received a NASA Public Service Group Achievement Award for its exemplary performance and timeliness in managing and constructing the facility.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

X

A. H. Lavender
305 867-2468

For Release:
November 1, 1976

RELEASE NO: KSC 482-76

OCTOBER NASA TOURS VOLUME EXCEEDS 1975 LEVEL

KENNEDY SPACE CENTER, FL.--NASA Tours volume in October was 50,840, a 16.4 percent gain over patronage during the corresponding month of 1975. The October, 1975, total was 43,674.

The 1976 ten-month total was 986,390, approximately two percent below the 1975 ten-month total of 1,005,485.

"Although volume thus far in 1976 is about 19,000 below that of the first ten months of 1975, patronage has exceeded that of a year ago during the past four months and if the trend continues I expect the 1976 NASA Tours total to be above the 1,168,189 who toured the Spaceport in 1975," said P. A. Fagnant, KSC's chief of visitor services.

The escorted tours of the Spaceport originate at the Kennedy Visitors Center, located six miles east of U. S. 1, south of Titusville.

The visitors center, featuring exhibits explaining the nation's space program, many flight models of launch vehicles and manned spacecraft, movies and space science lectures and demonstrations, is open without charge to the public daily throughout the year, with the exception of Christmas Day.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

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For Release:

Dick Young
305 867-2468

November 4, 1976

RELEASE NO: KSC 488-76

KSC CHRISTMAS TOURS TO OFFER DRAMATIC ATTRACTIONS

KENNEDY SPACE CENTER, FLA.--A new and dramatically enhanced tour of the nation's Spaceport will be offered to the public during the annual Christmas rush here from mid-December through early January.

The new KSC tour will include several of the most popular and dramatic attractions at 3rd Century America, the U. S. Bicentennial Exposition on Science and Technology held from May 31 through September 7.

Now to be offered as part of the public tour of KSC will be the spectacular Apollo 11 launch simulation in the Launch Control Center Firing Room, the lunar diorama in the Flight Crew Training Building and the chance to inspect a full-scale Apollo/Saturn V space vehicle.

A unique shuttle bus arrangement will permit visitors to enjoy the attractions in the Vehicle Assembly Building/Launch Control Center area at Launch Complex 39 at their own leisure.

Two of the 120-foot diameter geodesic domes housing exhibits at 3rd Century America are being retained near the horizontally-displayed Saturn V/Apollo in the shadow of the VAB. These will be used as shelter and rest areas and a staging point for the shuttle buses carrying visitors to the viewing area in the VAB and the Launch Control Center for the Apollo launch simulation.

The new attractions are in addition to a vastly expanded array of exhibits and audio visual programs at the Visitors Center, departure point for the tours and the free focal point of any visit to KSC.

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"The new KSC tour," explained P. A. Fagnant, Chief of KSC's Visitor's Services Branch, "is part of a long-range plan to enhance our program and accommodate the public more effectively. The Christmas season is one of our three peak periods each year and we're inaugurating the new tour on an experimental basis."

The new and improved tour is being offered at no increase in fares: \$2.50 for adults, \$1.25 for youths from 13 to 18 years and 50 cents for children from 3-12 years.

Tour buses will leave the Visitors Center beginning at 8 a.m. each day except Christmas and will proceed through the KSC Industrial Area to the Flight Crew Training Building where astronauts trained for their journeys to the Moon. The last bus will leave shortly after dark to accommodate late arriving visitors.

The Flight Crew Training Building stop will include demonstrations of the sophisticated simulators and other training devices used in preparations for the lunar exploration missions of Project Apollo. Also a part of this major tour stop is a full-scale Apollo spacecraft.

The Lunar Diorama also in this building includes the only remaining Lunar Module capable of flight. It serves as the "star" in a light and sound show tracing the nation's six successful missions to the lunar surface.

The diorama is a realistic recreation of the Apollo temporary lunar bases and includes "astronauts", a Lunar Roving Vehicle and an Apollo Lunar Surface Experiments Package (ALSEP) left behind as a scientific station on the Moon's cratered surface.

In the past, the Flight Crew Training Building was capable of handling only two busloads of visitors simultaneously. When the new tours begin in December, the building will be capable of handling eight busloads simultaneously and all tour patrons will now be able to view this major KSC attraction.

The tour buses will carry visitors to the Saturn V/Apollo display adjacent to the VAB. Tour patrons can enjoy the attractions in the Launch Complex 39 area at their own pace before reboarding shuttle buses for the return trip to the Visitors Center.

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The Launch Control Center simulation is a dramatic but technically accurate re-creation of the launch of Apollo 11 on July 16, 1969.

This realistic, multimedia presentation blends motion pictures and slides on four large firing room screens with the taped voices of the KSC launch team, the astronauts and Mission Control to recreate the drama of man's first journey to the Moon.

Firing Room 3's hundreds of consoles wink and blink with cascading lights as the countdown clocks tick inexorably down to ignition and liftoff.

In adjacent Firing Room 4, KSC Director Lee R. Scherer outlines the Center's ongoing unmanned launch programs and discusses the Space Shuttle program in a slide show with taped narration which serves as a prelude to the Firing Room 3 show.

Darkness comes early during the winter months but the installation of lights in the Saturn V display area near the VAB will permit tour operations after dark.

"Even though we have adequate lighting," said Fagnant, "we would suggest that people come early in the day to make sure they have adequate time to enjoy all our attractions to the fullest."

The Visitors Center - accessible from the NASA Causeway off U. S. Route 1 two miles south of Titusville and via State Road 3 on Merritt Island - remains open without charge.

This large public-use complex includes a new Hall of History in addition to the older structures and exhibits which have made it such a popular destination point for Florida tourists.

The KSC Visitors Center attracts more than a million visitors a year with peak visitations occurring during the Christmas, Easter and summer school vacation periods when family groups are free to travel.

The new tour will be in operation on a trial basis from December 20 through January 2.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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A. H. Lavender
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For Release
November 5, 1976

RELEASE NO: KSC 490-76

SPACEPORT CONSTRUCTION CONTRACT AWARDED TO ORLANDO FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$284,900 construction contract to Norflor Construction Corporation, Orlando, Fla.

The contractor will install an airlock in NASA's Spin Test Facility at Cape Canaveral Air Force Station to provide a clean room environment for the prelaunch preparation of spacecraft.

The 50-foot x 34-foot x 45-foot high airlock installation will include a five-ton bridge crane, air conditioning, high efficiency particle accumulator, roll-up door, personnel airlock and electrical, vacuum, compressed air and gaseous nitrogen lines. Construction is to be completed within 160 days after the contractor's notification to proceed.

The new clean room will be the site of preparation of future Delta-launched spacecraft and later will be used for Space Shuttle payload processing.

Utilization of the new facility will begin immediately upon completion of construction. A number of Delta-launched spacecraft will be processed there during the spring and summer of 1977 while present clean room installations are occupied by elements of two Mariner Jupiter Saturn spacecraft undergoing preparations for launches scheduled in August and September.

Spacecraft scheduled for preparation in the Spin Test Facility clean room during the spring and summer are GEOS, a European Space Agency (ESA) geodynamic experimental ocean satellite scheduled for launch in April, 1977; a geostationary operational environmental satellite (GOES), scheduled for launch in May; OTS, an ESA orbital test satellite, scheduled for launch in June; Japan/GMS, a Japanese meteorology satellite, scheduled for a July launch; SIRIO, an Italian communications research satellite, scheduled for launch in August; and METEOSAT, an ESA meteorology satellite, scheduled for launch in September.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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Darleen Hunt
305 867-2468

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NASA TOUR VOLUME REACHES ONE-MILLION FOR 1976

KENNEDY SPACE CENTER, Fla.--The one-millionth 1976 NASA tour patron purchased a ticket for an escorted bus tour of the Spaceport and adjacent Cape Canaveral Air Force Station today, marking the seventh time that the million patronage mark was passed in eight years.

This year's millionth ticket was purchased by James Price of Elmhurst, Illinois, who was accompanied by his wife and three daughters.

The tours originated in July 1966 and to date over 10 million visitors have purchased tickets for tours of the space center. Surveys indicated that an additional 25 percent of visitors to the Center do not take the tour, but remain at the Visitors Center where exhibits, lectures and movies are available at no charge.

Two new facilities added to the Visitors Center this year are a carousel cafeteria, a modern fast food service center, and the Hall of History, an exhibit area with memorabilia of the exploration of space.

The Hall of History features a number of space items, including a 1/10th scale model of a Saturn V launch vehicle, astronaut spacesuits, an astronaut transfer van, a lunar rover, an actual command module from the Apollo Soyuz mission and a scale model of the Skylab Multiple Docking Adapter.

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National Aeronautics and
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John F. Kennedy Space Center
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A. H. Lavender
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KENNEDY SPACE CENTER SCHEDULES 17 LAUNCHES IN 1977

KENNEDY SPACE CENTER, Fla.--Seventeen launches, including 11 Deltas, four Atlas Centaurs and two Titan Centaurs, have been scheduled in 1977 by the Kennedy Space Center's Expendable Vehicles Directorate.

"With 17 space vehicle launches on the 1977 schedule, which is four more than the number launched in 1976, we anticipate a heavy work load throughout the year," said Director George F. Page.

Ten of the Deltas will be launched from Complex 17, Cape Canaveral Air Force Station, and one from a KSC launch pad at the Western Test Range, Vandenberg Air Force Base, Calif.

The four Atlas Centaurs will be launched from Complex 36, Cape Canaveral, and the two Titan Centaurs from Complex 41 on the Cape.

The Cape Canaveral launch schedule is as follows:

The first 1977 launch will be NATO-IIIB, a North Atlantic Treaty Organization communications satellite, in January. The launch, atop a Delta booster, was originally scheduled in December, 1976, but was postponed to provide additional time for testing of the spacecraft at the manufacturer's plant in California.

PALAPA-B, second of two communications satellites to be launched by NASA for the Indonesian government, is scheduled for launch on a Delta in March. The satellite will expand the nation's domestic communications system initiated by PALAPA-1, which is on station over the Pacific Ocean providing television, radio, telephone and data communications between the capital city and Indonesia's 26 provinces.

GEOS-D (Geodynamic Experimental Ocean Satellite-D) will be launched on a Delta for the European Space Agency (ESA) in April. The satellite will test the effectiveness of newly developed instruments in monitoring ocean topography and observing sea state.

Launch of the first of three High Energy Astronomical Observatories (HEAO), on an Atlas Centaur, is scheduled in April. Using a combination of charged particle detectors and the Earth's magnetic field as a mass spectrometer, HEAO will separate the isotopes of cosmic rays and obtain information on the origin of the rays and how they are changed as they propagate through interstellar space. Additional HEAO launches are scheduled in 1978 and 1979.

Geostationary Operational Environmental Satellite-B (GOES-B) will be launched on a Delta in May. The National Oceanic and Atmospheric Administration satellite, carrying improved instrumentation for monitoring weather patterns, will join sister satellites SMS-1, SMS-2, and GOES-1 in geosynchronous orbit.

The first of two 1977 Intelsat-IV-A communications satellite launches for the International Telecommunications Satellite Organization is scheduled in June. The launch vehicle will be an Atlas Centaur.

An ESA/Orbital Test Satellite (ESA/OTS) will be launched on a Delta in June. The spacecraft, carrying advanced experimental communications systems, will be inserted into geosynchronous orbit over the equator at 10 degrees east longitude.

JAPAN/GMS (Geostationary Meteorological Satellite) will be launched on a Delta for the Japanese Space Agency in July. The spacecraft will become the Japanese portion of a global network of environmental satellites.

Two Mariner Jupiter Saturn (MJS) launches are scheduled in August. The launch vehicles will be Titan Centaurs. The two spacecraft will be instrumented to obtain data on the environments and atmospheres of Jupiter and Saturn, with emphasis on the latter's rings. Flight time to Jupiter will be more than one and one-half years, and the trip to Saturn will require over three and one-half years.

SIRIO-A, an experimental communications satellite, will be launched for the Italian government on a Delta in August. It will be inserted into a geosynchronous orbit at 15 degrees west longitude.

ESA/METEOSAT, the European Space Agency's first meteorological satellite, is scheduled for launch on a Delta in August.

FLTSATCOM-A (Fleet Satellite Communications-A), the first of five geosynchronous orbiting satellites for a U.S. Navy worldwide communications satellite system, is scheduled for launch on an Atlas Centaur in September.

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The first two of three International Sun Earth Explorers (ISEE), jointly sponsored by NASA and ESA, will be launched on a Delta in the fourth quarter. ISEE-A is a NASA spacecraft and ISEE-B was developed by ESA. Shortly after launch, ISEE-B will separate from ISEE-A and become active. The two spacecraft will be inserted into an orbit with an initial perigee of about 800 miles and an apogee of 23 Earth radii, or about 91,000 miles. The ISEE-B spacecraft will be successively maneuvered to fixed distances of about 60, 600 and 3,000 miles from ISEE-A, remaining in each orbit from one to three years. During their multi-year missions the two spacecraft will investigate solar-terrestrial relationships at the outermost boundary of the Earth's magnetosphere and examine solar wind near Earth and the shock wave which forms the interface between the solar wind and the Earth. ISEE-C is scheduled for launch in 1978.

JAPAN/CS, a Japanese geosynchronous communications satellite to provide domestic telephone and color television transmissions, will be launched on a Delta in the fourth quarter.

Another Intelsat-IV-A communications satellite launch, on an Atlas Centaur, is scheduled in the fourth quarter.

Scheduled for launch from the Western Test Range on a Delta in September is NASA's third Land Satellite, LANDSAT-C, to expand worldwide collection of earth resources data.

Two possible callup missions, an ITOS meteorological satellite that would be launched from the Western Test Range, and RCA-C, which would be launched from Cape Canaveral, are also on the tentative 1977 schedule, as is a possible ESA/OTS backup, which would also be launched from the Cape. All would be launched on Deltas.

1977 LAUNCH SCHEDULE

<u>Date</u>	<u>Spacecraft</u>	<u>Launch Vehicle</u>	<u>Pad</u>	<u>Remarks</u>
January	NATO-III B	Delta	17	Reimbursable
March	PALAPA-B	Delta	17	Reimbursable
April	GEOS-D	Delta	17	Reimbursable
April	HEAO-A	Atlas Centaur	36	
May	GOES-B	Delta	17	Reimbursable
June	INTELSAT-IV-A-C	Atlas Centaur	36	Reimbursable
June	ESA/OTS	Delta	17	Reimbursable
July	JAPAN/GMS	Delta	17	Reimbursable
August	MJS-A	Titan Centaur	41	
August	MJS-B	Titan Centaur	41	
August	ESA/METEOSAT	Delta	17	Reimbursable
August	SIRIO-A	Delta	17	Reimbursable
September	FLTSATCOM-A	Atlas Centaur	36	Reimbursable
September	LANDSAT-C	Delta	WTR	
4th Quarter	ISEE's-A &-B	Delta	17	
4th Quarter	JAPAN/CS	Delta	17	Reimbursable
4th Quarter	INTELSAT IV-A-D	Atlas Centaur	36	Reimbursable

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(13) Sept - (Navy) Transit 17 / 17
(14) Sept - ISEE-A (Navy) Delta / 17

POSSIBLE:

(20) June - ITOS-E2
(21) Sept - RCA C
(22) Dec - (Navy) Transit
(23) Dec - backup OTS

Delta / Vandenberg
Delta / Cape C.
Scout / Vandenberg
? Delta ? ? Cape C ?

[IF NOAA satellites develop trouble]
[IF RCA " "]
[IF Transit " "]
[IF OTS " "]

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For Release:
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RELEASE NO: KSC 502-76

AWARDS CEREMONY RECOGNIZES ROLES IN 3RD CENTURY AMERICA

KENNEDY SPACE CENTER, Fla.--Awards for their roles in 3rd Century America, the nation's Bicentennial Exposition on Science and Technology, were presented to employees, employee groups, and supporting organizations by NASA Administrator Dr. James C. Fletcher during a ceremony at the Spaceport today.

NASA Outstanding Leadership Medals were awarded to KSC Deputy Director Miles Ross, Cocoa Beach, who was general manager of 3rd Century America, and Space Transportation System Processing Director Paul C. Donnelly, Indian Harbor Beach, who served as exposition project manager.

NASA Exceptional Service Medals were presented to Paul C. Gauger, Jr., Cocoa Beach, design engineering, who was project engineer for exposition site preparations; Joseph F. Malaga, Merritt Island, KSC director of administration and management operations, for business management and institutional support; Charles T. Hollinshead, Cocoa Beach, KSC public affairs chief, for his role in 3rd Century America public affairs and promotional activities; Ray E. Yost Jr., Cocoa Beach, deputy to the KSC resources management officer, for establishment and operation of the exposition budgeting system; Sara Sheppard, Cocoa Beach, KSC awards officer, who served as administrative assistant to the 3rd Century America project manager.

William H. Schick, Merritt Island, Chief of the Complex 39 operations and special projects office, 3rd Century America's chief project engineer; Billy H. Childers, Merritt Island, technical support operations support management office, for his coordination of exposition support requirements; George E. Harrington, Cocoa Beach, recently retired chief of the supply and transportation office, for his role in coordinating exposition logistics requirements; and Major James R. Craig, Jr., USAF, Air Force Eastern Test Range director of information, for his role as Department of Defense liaison officer for 3rd Century America.

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Robert D. Hays, Merritt Island, shuttle engineering directorate, 3rd Century America technical exhibits designer and installation supervisor, was also a medal recipient. On temporary duty at NASA's Dryden Research Center, Edwards, Calif., Hays was not present to accept the award.

Group Achievement Awards were presented to:

- 3rd Century America Administrative Support Team, accepted by James J. Summa, Merritt Island, procurement office.
- 3rd Century America Project Coordinators, accepted by James Devlin, Satellite Beach, support operations.
- 3rd Century America Technical Staff, accepted by James J. Kubasko, Titusville, shuttle payloads.
- 3rd Century America Public Affairs Team, accepted by Michael W. Bishop, Titusville, visitors services branch.
- 3rd Century America Facilities Acquisition Team, accepted by John K. Feussner, Cocoa, institutional and expendable vehicles project engineering office.
- 3rd Century America Site and Exhibit Activation Team, accepted by Robert T. Creeden, Merritt Island, support operations.

Harry B. Chambers, general manager, NASA Tours Division, TWA Services, Inc., the prime contractor for facilities construction and operation of 3rd Century America, and Robert H. Clark, TWA's project manager for 3rd Century America, were recipients of NASA Public Service Awards. TWA Services, Inc., is KSC's concessionaire for Visitors Center and NASA Tours operations.

Receiving NASA Public Service Group Achievement Awards were:

- The Graphics Unit of the Boeing Company, for art services. The award was accepted by supervisor Richard Huffman.
- Stottler, Stagg and Associates, also doing business as Brevard Engineering Co., for its role as architect-engineering contractor for 3rd Century America. Brevard Engineering Co. president Richard A. Stottler, Jr., accepted the award.
- TWA Services, Inc., for management and operation of 3rd Century America. The award was accepted by J. J. Dillion, president, TWA Services, Inc., a subsidiary of the Canteen Corporation.
- Walt Disney World, for assistance in designing the 3rd Century America logo and the exposition promotional campaign. The award was accepted by Robert Matheison, vice president of operations.

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NASA TOURS NOVEMBER VOLUME WAS 56,003

KENNEDY SPACE CENTER, FLA.--NASA Tours volume in November was 56,003, exceeding the November, 1975, total by 15 percent. November, 1975 volume was 48,687.

"November marked the fourth consecutive month of increased tour volume compared to 1975," said P. A. Fagnant, chief of KSC's visitors services branch. "If the trend continues, 1976 volume should exceed last year's and will be third highest since the tour program began in 1966. Patronage during 1972 was 1,389,042 and in 1973 was 1,264,321. While the year's volume probably will not reach the 1973 level, we believe the year-end total will exceed the 1,168,189 of 1975."

A new and dramatically enhanced tour program will be offered to accommodate a possible record number of visitors during the Christmas holiday period.

The new tour, extending from mid-December through early January, will include popular attractions at 3rd Century America, including a re-creation of the Apollo 11 launch in the Launch Control Center's Firing Room 3 and an opportunity for a close-up inspection of the mammoth Apollo/Saturn V space vehicle on display near the Vehicle Assembly Building.

Also to be offered on the Christmas tour will be a visit to the building where astronauts trained for missions to the Moon to view a newly developed lunar diorama.

A shuttle bus arrangement will permit visitors to enjoy the many attractions of the Vehicle Assembly Building/Launch Control Center area at their leisure.

Tours of the Spaceport originate at the KSC Visitors Center, accessible to the public via the NASA causeway from U.S. 1 south of Titusville, Fla., or via Florida Road 3 and the NASA Causeway from Merritt Island.

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PERFECT LAUNCH RECORD ATTAINED IN 1976

KENNEDY SPACE CENTER, Fla.--The past year was one without manned missions as the buildup continues for the Space Shuttle, but KSC's Expendable Vehicles Directorate conducted 13 unmanned launches during 1976.

And despite the "unlucky 13" superstition, all of them were successful.

It was the first completely successful year since 1972.

The launches included one Titan-Centaur, three Atlas-Centaur and nine Delta rockets. Of the 13 missions, 11 were launched from KSC's facilities at Cape Canaveral and the remaining two from the Western Test Range in California.

And continuing a pattern set in recent years, the overwhelming majority of the launches were for cash customers--business firms, foreign governments and other agencies of the United States government which reimbursed NASA for the rockets and launch services.

The launch year opened on January 15 when a Titan-Centaur hurled the joint U.S.-West German Helios-2 on a mission of exploration toward the sun.

The year's second launch---that of the joint United States-Canadian Communications Technology Satellite--was conducted aboard a Delta rocket two days later.

The third launch of the year came on January 29 when an Atlas-Centaur lifted off from Complex 36 to orbit the second Intelsat IV-A communications satellite for the International Telecommunications Satellite Organization.

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Delta 120 was launched on February 19 to orbit Marisat-1, first of three satellites in a series designed to link ships at sea and off-shore facilities with shore stations. Marisat-2 was launched on June 9 and Marisat-3 on October 14 to complete the global maritime communications network.

Marisats are now in synchronous orbits 22,300 miles above the Atlantic, Pacific and Indian oceans providing high quality communications for the U.S. Navy, commercial maritime traffic and off-shore industry. The system is owned by COMSAT General, RCA Global Communications, Western Union International and ITT World Communications.

RCA Satcom-2 was launched by a Delta rocket augmented by nine king-size solid strap-on rocket motors on March 26 to orbit the second RCA domestic commercial communications satellite.

NATO-IIIA, first of a new generation of communications satellites for the North Atlantic Treaty Organization was launched aboard Delta 122 on April 22. NATO-IIIB, the second in the new series, had been scheduled for launch in December, but its mission was postponed until early in 1977.

KSC's first launch of 1976 from its west coast facilities at Vandenberg AFB, California, came on May 4, when LAGEOS (Laser Geodynamic Satellite) was launched aboard Delta 123 from SLC-2W.

The giant "golf ball" is designed to demonstrate the capability of laser tracking techniques to make extremely accurate measurements of the Earth's rotation and movement of its crust. Hopefully, LAGEOS will provide a better understanding of the mechanisms which cause earthquakes.

COMSTAR A-1, first of a series of new high-capacity communications satellites for domestic service, was launched aboard Atlas-Centaur 38 on May 13. The second link in the system, COMSTAR A-2, was orbited aboard Atlas-Centaur 39 on July 22.

Each has a capacity for approximately 14,400 high-quality telephone circuits. The satellites are in synchronous, or hovering, orbits 22,300 miles above the equator and serve the 48 contiguous states, as well as Hawaii, Alaska and Puerto Rico.

The system is owned and operated by the COMSAT General Corporation. The entire capacity of the system is leased to the American Telephone and Telegraph Company and General Telephone and Electronic Companies.

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The island nation of Indonesia on the rim of southeast Asia joined the growing number of countries owning domestic communications satellite systems on July 8 with the launch of PALAPA-1 aboard Delta 124. The second satellite in the system is to be launched by KSC in 1977.

The Palapa system is designed to provide a new era of communications for the 130 million people living on the Indonesian archipelago's 3,000 inhabited islands sprawled over an area of land and water approximately the same size as the continental United States.

KSC's second west coast launch of 1976, on July 29, placed NOAA-5, a weather satellite, in a 790-mile circular orbit for the National Oceanic and Atmospheric Administration (NOAA).

Instruments aboard the satellite provide visible and infrared images of cloud cover, snow, ice and the sea surface, and gather information on temperatures and moisture in the atmosphere.

Only 3 of the spacecraft--Helios 2, LAGEOS and Communications Technology Satellite--had developmental or scientific missions. The remaining 10 satellites were operational weather or communications spacecraft launched for paying customers.

The 1976 mission total was five below the 18 launched in 1975 and the launch rate was materially below that of the 1960s.

The number of KSC launches since 1958, when NASA was created, through 1975 is as follows: 1958-8, 1959-14, 1960-17, 1961-24, 1962-27, 1963-13, 1964-29, 1965-30, 1966-30, 1967-28, 1969-22, 1970-12, 1971-17, 1972-18, 1973-14, and 1974-10.

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X

KSC CONTRACT OPPORTUNITIES TO BE DISCUSSED AT JANUARY 19 CONFERENCE

KENNEDY SPACE CENTER, Fla.--Planned Kennedy Space Center contracts for Space Shuttle ground support equipment will be discussed during a conference in the Center's Training Auditorium on January 19.

Designed to provide business firms advanced information on contracts to be awarded by KSC during 1977, the conference will feature discussion of more than 40 planned ground support facilities and systems contracts.

Among contract awards planned in 1977 are those involving shuttle access stands and platforms in the Vehicle Assembly Building (VAB), and Orbiter access and servicing systems for the landing facility and the launch pad. In addition, contracts are planned for the fabrication of hydraulic, pneumatics and electrical panels and cables.

Business concerns desiring to have representatives attend the conference should submit names of attendees to B. J. Dryer III, Chief, Industry Advisory Office, AP-PRO-13, John F. Kennedy Space Center, NASA, Kennedy Space Center, Fla. 32899, prior to January 15.

Attendees will be badged at KSC Gate 3, located on State Road 405 one-half mile east of U.S. 1 south of Titusville, Florida.

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RELEASE NO: KSC 2-77

SYMPOSIUM WILL OUTLINE MINORITY OPPORTUNITIES AT SPACEPORT

KENNEDY SPACE CENTER, Fla.--Minority opportunities at the Spaceport will be discussed at a symposium scheduled January 15 at the Monroe Adult Community Education Center, 705 Avocado Avenue, Cocoa.

Sponsored by the Kennedy Space Center, the symposium will be opened by Joseph F. Malaga, KSC Director of Administration and Management Operations, followed by a discussion of KSC's procurement program by William M. Lohse, Director, KSC Procurement, Supply and Transportation. Future Spaceport construction programs will be outlined by Thomas E. Utsman, Deputy Director, Project Management, Design Engineering.

Explanation of the KSC Affirmative Action Plan that assures equitable employment of minority personnel by the Center's construction contractors, by Nathaniel Pilate, Chief of the Equal Opportunities Program Office, and KSC's equal employment opportunity program for Center civil service employees, by Beverly Merrilees of the Staffing and Personnel Services Branch, will be followed by a question and answer period.

Representatives of minority business firms and the general public are invited to attend the symposium, which opens at 9 a.m.

Additional information on the symposium may be obtained by telephoning Robert Manning, Coordinator of Adult Community Education at the Cocoa Center, 305-632-3080.

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SPACEPORT TOURS COMPLETE BUSY YEAR

KENNEDY SPACE CENTER, Fla.--A total of 1,137,367 visitors took guided bus tours of NASA's Kennedy Space Center and the adjacent Cape Canaveral Air Force Station during 1976.

The 1976 total was 2.6 percent below the 1,168,189 patrons taking the tour in 1975 and brought the total visitation since the guided bus tours were initiated in 1966 to 10,372,729.

The 1976 total represented the fifth busiest year in the history of Spaceport tours. The peak came in 1972 near the end of the Apollo program when the tours were taken by 1,389,042.

The tour total for December, 1976 was 94,783, a decline of 16.9 percent when compared with the 114,017 visitors taking tours in December, 1975.

Tour patronage has exceeded 1 million every year since 1969 with the exception of 1974 when the gasoline shortage severely slashed Florida tourism and dropped the tour total to 878,746.

A new and dramatically enhanced tour of KSC was offered to the public on a trial basis during the annual Christmas rush from December 20 through January 2.

The new tour included several of the most popular and dramatic attractions at 3rd Century America, the U. S. Bicentennial Exposition on Science and Technology held at KSC last summer.

These included the spectacular Apollo 11 launch simulation in the Launch Control Center, the lunar diorama in the Flight Crew Training Building and the chance to inspect a full-scale Apollo/Saturn V space vehicle in the vicinity of the Vehicle Assembly Building.

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These tour attractions were in addition to the vastly expanded array of exhibits and audio visual programs at the Visitors Center, the departure point for the tours and the free focal point of any visit to KSC.

The Visitors Center is accessible from the NASA Causeway off U. S. Route 1 two miles south of Titusville and via State Road 3 on Merritt Island and is open without charge.

This large public-use complex includes a new Hall of History in addition to the older structures and exhibits which have made it such a popular destination point for Florida tourists.

According to visitor comment cards, the tours are well received. Sample comments include:

"My interest in KSC was stimulated by the amount of taxpayer money invested in the space program. After spending the day here, I feel every penny has been well spent. I was incredibly impressed."

"We thoroughly enjoyed our visit. Very interesting."

"A most worthwhile and entertaining visit. Will recommend to friends at home."

"The tour is fabulous. We considered the simulated blast-off one of the supreme highlights of our visit from Oregon. The tours are imaginative, informative and well-managed."

KSC's Visitors Center is open to the public every day of the year with the exception of Christmas.

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NASA News

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COLD-STUNNED SEA TURTLES GIVEN WARM REFUGE AT SPACEPORT

KENNEDY SPACE CENTER, FLA.--Cold-stunned sea turtles occupying the shallow waters surrounding the Kennedy Space Center are being given warm refuge in a wildlife laboratory building and recreational swimming pond.

After temperatures in the low 20s swept Florida on the nights of January 19-20-21, 140 cold-paralyzed green, loggerhead and Atlantic Ridley sea turtles surfaced on the waters of Mosquito Lagoon and the Indian and Banana Rivers or were beached on their shores.

The Atlantic Ridley is on the endangered species list and the greens and loggerheads are candidates for the same listing. The size of the turtle population turned up by the freeze far exceeded the expectations of local wildlife authorities.

The giant reptiles are sensitive to water temperatures below about 50degrees. Temperature readings in Mosquito Lagoon, for example, were plunged to 39 degrees by the succession of below freezing nights.

Robert Yoder, Manager of the Merritt Island National Wildlife Refuge which has been established on NASA lands not in operational use, said the reptiles surfaced after they were "almost anesthetized" by the plunging water temperatures.

For several days after the freezes, fishermen, private citizens, personnel from the U. S. Fish and Wildlife Service and Florida Marine Patrol, and students from Florida Technological University (Orlando) located, reported or brought the reptiles to the FTU field laboratory on the northern end of the Kennedy Space Center.

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The largest - a loggerhead - weighed in at 243 pounds. The largest green weighed 130 pounds.

The lethargic turtles were kept in small wading pools or on their backs in the FTU laboratory for several days in hopes that rising water temperatures would permit their return to their natural habitat.

But the waters warmed only slightly and threats of new cold waves prompted removal of more than 100 of the larger reptiles to a 180-foot diameter, eight-foot deep swimming pond at the KARS recreation area on the south end of the center on January 25.

The large pond is fed by artesian springs pouring 75-degree water into the pool. Cooled by ambient air to about 64 degrees, the pond provides temperatures more acceptable to the turtles.

Dr. L. M. Ehrhart, an animal ethologist at FTU, which has a contract with KSC to conduct a baseline ecological study of the Spaceport, said the turtles will be held in the pond for 10 days to two weeks or until rising water temperatures permit their return to the surrounding estuaries.

The remaining turtles - somewhat smaller - will be kept in four water-filled, six-foot diameter plastic wading pools of the type used by children which have been moved into the field laboratory.

The rare Atlantic Ridley was rated a real find and wildlife experts were delighted at the unexpectedly large number of green turtles. The greens constituted approximately 80 percent of the turtles forced to surface by the cold water and are somewhat rarer than the giant loggerheads which come to KSC beaches in large numbers to lay their eggs during the summer months.

In a sense, the paralysis of the turtles by the cold proves that there's a silver lining in every freeze.

Part of the FTU effort involves netting and tagging turtles for release but netters have succeeded in catching only relatively few during the past year.

The labor expenditure ran 40 man-hours per turtle and the opportunity to tag the reptiles provided by the freeze provided a bonus of approximately two and a half man-years of netting and tagging effort.

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Page 3

All but about 10 of the turtles came from Mosquito Lagoon, the large, shallow estuary on the northeast side of the space center.

Many of the Lagoon's inhabitants were not so fortunate.

Large kills of jacks, pompano, topsail satfish and snook are reported to have resulted from the chilly water temperatures.

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For Release:

Iris Sullivan
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February 1, 1977

RELEASE NO: KSC 33-77

ELECTRICAL STORM STUDY EXTENDED

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$50,000 contract extension to the University of Arizona, Tuscon, Arizona, for continued study of changes in thunderstorm electrical fields and other thunderstorm phenomena in the Spaceport area.

The contract modification extends a contract originally awarded in April, 1974, until January 15, 1978, and brings the total contract value to \$116,000.

Dr. Phillip Krider of the University of Arizona, internationally recognized meteorologist, is among the scientists working with University of Arizona graduate and undergraduate students on the project. Under the contract, the university's Institute of Atmospheric Physics conducts studies during summer thunderstorm activity, utilizing KSC's sophisticated instrumentation system.

The contract provides for a detailed study of electric field changes and recovery curves created by lightning under varied meteorological conditions. Dr. Krider will supervise development of computer programs to determine and display the location of lightning discharges and thunderstorm characteristics.

This study is expected to develop methods and techniques to enhance and evaluate KSC's present meteorological system so that all aspects of Space Shuttle vehicle processing, launch and landing operations may be conducted safely and efficiently even under marginal environmental conditions.

The university's effort will be coordinated with programs of the many government, university and private industry agencies that will be involved in thunderstorm research at KSC next summer.

-more-

Page 2

The University of Arizona efforts supplement a program co-sponsored by the American Geophysics Union and American Meteorological Society known as TRIP (Thunderstorm Research International Program).

The program provides for 20-25 prominent atmospheric scientists to conduct research at KSC. KSC hosted the research teams and supported their activities during the summer of 1976. The teams will return to the Center in the summers of 1977 and 1978 to continue research.

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RELEASE NO: KSC 34-77

MORE THAN 69,000 TOURED KENNEDY SPACE CENTER IN JANUARY

KENNEDY SPACE CENTER, Fla.--More than 69,000 patrons purchased tickets for escorted bus tours of the Kennedy Space Center and adjacent Cape Canaveral Air Force Station in January as a high level of public interest in the Spaceport and U. S. aerospace activities continued.

January patronage of 69,497 was 15.7 percent below the record 82,494 who toured the Space Center in January, 1976.

"Although January, 1977, was far from a record month, it was the eighth January in the past nine years that tour volume exceeded 60,000, and in each of those years annual volume exceeded a million," said P. A. Fagnant, KSC's chief of visitor services.

NASA Tours originate at the Kennedy Visitors Center, accessible from the NASA Causeway off U. S. Highway 1 two miles south of Titusville, and via State Road 3 on Merritt Island.

The Visitors Center features displays, exhibits, space science lectures and space movie showings, all at no cost to the public. A new Hall of History, opened in mid-1976, features many displays tracing the evolution of the nation's aerospace programs.

Tours, available at nominal cost, provide visitors an opportunity to view historic launch sites at Cape Canaveral, view modifications to Center facilities for future Space Shuttle operations that are underway at many locations, have a close-up look at an Apollo-Saturn V space vehicle and enter the mammoth Vehicle Assembly Building.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

February 10, 1977

RELEASE NO: KSC 56-77

SOLAR ENERGY UNITS TO HEAT WATER FOR KSC FACILITIES

KENNEDY SPACE CENTER, Fla.--Solar energy units will be in operation at three KSC facilities for water heating purposes by October, helping to relieve the center's reliance on energy from fossil fuels.

Wallace H. Boggs, Energy Projects Coordinator on the staff of Raymond L. Clark, Director of Design Engineering, identified the three facilities as the Visitors Center cafeteria, the Banana River Repeater Station and the KSC Headquarters Building.

The first two projects should be in operation by late May and the latter should be completed by October.

Boggs said the Visitors Center installation will be able to supply up to 70 percent of water heating needs for the cafeteria. Water will be heated in a 176-square-foot flat plate collector to be located on the ground adjacent to the cafeteria. A conventional water heating system will provide the balance of hot water needs and serve as a backup during long periods of cloudy weather.

The Banana River Repeater Station is an electronic communications relay building located near the eastern shore of Merritt Island. The 470-square-foot flat plate collector array will provide up to 70 percent of the hot water needed for heating and air conditioning reheating.

Boggs said that design work on these two projects is 90 percent complete.

The Headquarters Building project is now going into the design phase and will require a 4,000-square-foot flat plate collector array on the ground nearby.

-more-

Page 2

This system is to provide 70 percent of the hot water needs of the structure's four central wings, including the cafeteria.

According to Boggs, all three systems will have the capability of heating water to 205 degrees Fahrenheit but the rate of water flow through the collectors will be adjusted so that it moves into insulated hot water storage tanks at a maximum temperature of 140 degrees F.

The flat plate collectors will be constructed facing south and angled at 28 degrees for maximum heating efficiency.

"We are not doing research," stressed Boggs. "These projects involve the operational use of solar heating as a conservation technique."

He noted that his group is looking into other areas where solar heating might be economical and into the feasibility of using solar energy techniques for air conditioning.

The Headquarters Building project is being funded jointly by the Energy Research and Development Administration (ERDA) and NASA. Energy savings should amount to \$11,000 for the first year of operation and \$151,000 over an eight-year period.

The Visitors Center and Repeater Station projects are being funded entirely by NASA. The energy savings should amount to approximately \$2,500 for the first year of operation and \$34,000 over an eight-year period.

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Handwritten notes and calculations:

205 =
+ 40 = 245
1. 8
+ 40 = 108
108 - 100 = 8
8 x 1.25 = 10
10 + 10 = 20
20 x 1.25 = 25
25 x 1.25 = 31.25
31.25 x 1.25 = 39.0625
39.0625 x 1.25 = 48.828125
48.828125 x 1.25 = 61.03515625
61.03515625 x 1.25 = 76.29404296875
76.29404296875 x 1.25 = 95.3675537109375
95.3675537109375 x 1.25 = 119.209442138671875
119.209442138671875 x 1.25 = 149.01180267333984375
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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center Florida 32899
AC 305 867-2468

For Release

A. H. Lavender
305 867-2468

March 2, 1977

RELEASE NO: KSC 63-77

FEBRUARY NASA TOURS VOLUME WAS 99,454

KENNEDY SPACE CENTER, Fla.--February NASA Tours patronage was 99,454, down 9.6 percent from the record 112,157 total compiled in the corresponding month of 1976.

The February drop marked the third consecutive month of reduced NASA Tours patronage compared to the previous year, but brought the 1977 two-month total to 168,951, fourth highest in the program's ten years of operation.

Multimedia shows in the Launch Control Center--a briefing on the future Space Shuttle in firing room 4 and a dramatic re-creation of the launch of Apollo 11 in firing room 3--were open to NASA Tours during Daytona Speed Weeks as was KSC's Flight Crew Training Building. These attractions will be temporarily closed for alterations after March 4, but are expected to be reopened to accommodate anticipated crowds during the Easter vacation period.

While the LCC and training building presentations are closed, tour patrons will continue to enter the Vehicle Assembly Building where Space Shuttle vehicles will be prepared, view the Apollo/Saturn V displayed near the VAB, drive around Complex 39's Pad A where preparations for Shuttle operations are underway and tour Cape Canaveral Air Force Station.

NASA Tours originate at the Kennedy Visitors Center, accessible from the NASA Causeway off U. S. Highway 1 south of Titusville, and via State Road 3 from Merritt Island.

The visitors center features displays, exhibits, space science lectures and space movie showings, all provided free to the public, with continuous activities in the main building and a new Hall of History, opened during 1976.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center Florida 32899
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For Release

Darleen Hunt
305 867-2468

March 2, 1977

RELEASE NO: KSC 70-77

HUD SOLAR CENTER DISPLAYED AT VIC MARCH 15-18

KENNEDY SPACE CENTER, Fla.--A traveling exhibit on solar heating and cooling for homes will be available for free viewing by the public at the Kennedy Space Center Visitors Center from March 15 through 18th.

Assembled by the U. S. Department of Housing and Urban Development (HUD) the exhibit is housed in a 30-foot travel van and will stop at KSC as part of its nationwide tour.

The HUD Solar Center not only serves as a source of information for the public on solar heating and cooling, but is being used to gather data from the public to determine the public interest and needs for various types of information. This data will be used for updating the national solar energy data bank at the Energy Research and Development Administration's (ERDA) Technical Information Center.

Two knowledgeable employees from the Franklin Institute Research Laboratories, Philadelphia, will man the exhibit and answer questions of visitors and provide information.

The exhibit contains back-lighted pictures of solar homes, a map of the U. S. showing solar home locations, and two demonstration models of solar heating systems.

Parked adjacent to a covered walkway, the van/exhibit will be located at the east end of the Visitors Center parking lot. Hours of operation will be from 8:00 a.m. to 7:00 p.m.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867 2468

For Release

Dick Young
305 867-2468

March 7, 1977

RELEASE NO: KSC 72-77

KSC LAUNCH PADS "LOADED" AS BUSY YEAR GETS IN FULL SWING

KENNEDY SPACE CENTER, Fla.--The "no vacancy" sign is up at all of KSC's launch pads with the exception of the Complex 39 facilities being modified for the Space Shuttle.

Undergoing processing this week as the busy 1977 launch schedule gets in full swing are six rockets and four spacecraft.

KSC's Expendable Vehicles Directorate uses five launch pads at three complexes on Cape Canaveral Air Force Station and all of them are loaded.

"It's kind of busy out there," said George F. Page, Director of the Expendable Vehicles Directorate. "We just don't have any more pads to put them on.

"And we're going to have to coordinate all our operations very carefully to make certain we get everything off on schedule."

Pads A and B at Launch Complex 17 on the southeast rim of the Cape are occupied by Delta rockets scheduled for launch in March and April.

Delta 129 is poised at Pad A to launch Palapa-B, an Indonesian communications satellite, on Thursday, March 10. The launch opportunity for that date extends from 6:16 to 8:16 p.m. EST.

Adjacent Pad B is occupied by Delta 130, which is to orbit Geodynamic Experiments Ocean Satellite-D for the European Space Agency. Launch of the GEOS satellite - which will test the effectiveness of new developments in monitoring ocean topography and observing sea states - is now scheduled for the early morning of April 20.

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Medium weight payloads are launched aboard Atlas/Centaur rockets from Complex 36, slightly to the northwest of the eastern tip of the Cape.

Atlas/Centaur 39 is located on Pad A and will be used to launch an Intelsat-IVA communications satellite in June.

Pad B is occupied by Atlas/Centaur 45, which is to be used for the launch of the first of three High Energy Astronomical Observatories (HEAO) at 12:45 a.m. EST on April 15. The second and third in the HEAO series are to be launched in 1978 and 1979.

Twin Mariner-class spacecraft are to be launched aboard Titan/Centaur rockets at 10 day intervals in August on missions which will carry them to Jupiter and Saturn with a possible way stop at Uranus. Both launches will be from Complex 41, near the False Cape and slightly to the southeast of KSC's Launch Complex 39.

Titan/Centaur-6 for the second mission is now undergoing checkout at Complex 41 while Titan/Centaur-7, to be flown on the first mission, is being built up in the Vertical Integration Building at the Titan III Complex.

TC-6 will be returned to the VIB for temporary storage and TC-7 will be moved out to Complex 41 in April. The moves are part of the intricate scheduling required to launch the two vehicles from a single pad only days apart. The first Mariner Jupiter/Saturn mission is to be launched on August 20. The second is to follow on August 30.

Although Complex 17's Pad A will soon be vacated by the Palapa launch, it will not long be without an occupant.

Delta 131 for the launch of the second in a series of Geostationary Orbiting Environmental Satellites (GOES), an operational weather satellite owned by the National Oceanic and Atmospheric Administration, will be erected on Pad A in April. Launch is scheduled for May.

A total of 17 launches are scheduled by KSC during 1977. Sixteen of them are from facilities at Cape Canaveral Air Force Station. The remaining mission - LANDSAT C - will be launched from KSC facilities at the Western Test Range in California.

At least one launch is scheduled for every month through the remainder of the year.

"With 17 space vehicles on the schedule," said Page, "this is four more than the number launched in 1976. We anticipate a heavy work load to stay with us throughout the year."

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center Florida 32899
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A. H. Lavender
305 867-2468

March 25, 1977

RELEASE NO: KSC 76-77

ENERGY EXHIBIT SCHEDULED AT KSC VISITORS CENTER APRIL 1-7

KENNEDY SPACE CENTER, FLA.--ENERGY, a free exhibit opening April 1 at the Spaceport's Visitors Center, is for those who have heard much about the energy situation, but want a better understanding of what the problem is and what can be done about it.

The exhibit, open April 1 through April 7 from 8:00 a.m. through 7 p.m. daily, will be interesting to both adults and students.

ENERGY comes to the Kennedy Space Center from the U. S. Energy Research and Development Administration. It is housed in two 50-foot trailers filled with animated exhibits, films and visitor-operated consoles. Two specially trained science teachers from the American Museum of Atomic Energy in Oak Ridge, Tenn., will be available to answer questions.

ENERGY, a major educational exhibit of ERDA, is one of several traveling exhibits in the eastern United States from the American Museum of Atomic Energy.

All types of energy currently in use are covered by the exhibit. So are possible future energy sources. Thus, by seeing ENERGY the visitor can gain an overall picture of the nation's energy problems and their effect on America's standard of living.

For example, present natural gas supplies are expected to be depleted with 15 to 40 years, and several exhibits explain how additional natural gas can be obtained from the nation's huge coal reserves.

Petroleum, the mainstay of America's transportation and a major fuel for generating electric power, is expected to be exhausted in about 50 years. But, as one exhibit explains, petroleum may be obtained from the processing of oil shale.

-More-

Through other exhibits, visitors may observe the process of developing power through magnetohydrodynamics, a sort of "supercharger" for conventional power generators. They can also see exhibits on solar heat collection and geothermal electric power generation.

Other exhibits demonstrate the principles of uranium fission nuclear reactors currently generating electricity around the country. Those being studied for future use, such as the breeder reactor which would make more fuel than it consumes, and the hydrogen fusion reactor which would operate on the same principle as the sun, are also demonstrated.

Besides exhibits, there are many question and answer consoles where visitors can measure their "Energy Quotients."

The exhibit, like the American Museum of Atomic Energy, is operated for ERDA by Oak Ridge Associated Universities, a nonprofit educational and research organization of 45 colleges and universities.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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(8) 623-2468

Dick Young
305 867-2468

Release # 77-77

For Release:

March 25, 1977

MANATEE TRACKING SYSTEM TO BE DEVELOPED

KENNEDY SPACE CENTER, Fla.--If it's possible to build a better mousetrap, there must be a better way to track a manatee.

Previous manatee tracking experiments conducted by the U. S. Fish and Wildlife Service in waters surrounding the Kennedy Space Center have used sonar "pingers", devices with a number of problems - including range.

KSC recently awarded a contract for \$25,970 to the Georgia Tech Research Institute at the Georgia Institute of Technology in Atlanta to develop a more satisfactory system.

The contract calls for Georgia Tech to develop a workable concept of an automatic tracking system which will enable the U. S. Fish and Wildlife Service to determine the location and movements of manatees.

The last manatee tracking experiment at KSC was conducted in October, 1975.

According to Blair Irvine of the U. S. Fish and Wildlife Laboratory in Gainesville, the tracking device used at that time was a sonar "pinger" attached just ahead of the large mammal's tail by a girdle.

The device was not completely satisfactory. Irvine said sonar range is limited and the signals are highly directional, making tracking difficult.

"What we're looking for," said Irvine, "is the best way to track an animal like the manatee. And we'll work very closely with them in adapting it to the animal."

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Page 2

The manatee is an endangered species and the tracking project is designed to pinpoint its roaming patterns and living habits.

The total U. S. population of the Caribbean manatee - one of three varieties in the Atlantic Basin - is estimated at from 1,200 to 1,500 animals, all of them in Florida.

Of this herd, perhaps 100 animals are concentrated in the waters of the Banana and Indian Rivers and Mosquito Lagoon near KSC.

Irvine noted that the past winter had exacted a large toll on the local manatee population and that the 25 dead animals found in local waters represented perhaps 20 to 25 percent of the resident herd.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center Florida 32899
AC 305 867-2468

For Release:

March 31, 1977

Dick Young
305-867-2468

RELEASE NO: KSC 84-77

PROPOSALS ASKED FOR SPACE CENTER TELEPHONE SYSTEM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has issued a request for proposals for the installation and operation of an administrative telephone system.

The automatic dial telephone system will include basic switching equipment, telephones, cabinets, switchboards and consoles, interior wire and cable, and any ancillary equipment necessary for proper operation of the system.

The proposal requests were mailed to 16 firms in the communications industry on March 25 and proposals must be submitted to the KSC Procurement Office before the close of business on May 13.

The existing system with more than 6,150 telephones now in use is owned by the Southern Bell System and was installed in 1963.

Competing firms must have substantial direct experience and currently be engaged in the design, development, production, installation and sustaining services of large-scale telephone systems with 5,000 lines or more.

A preproposal conference will be held at the KSC Training Auditorium on April 12 to provide prospective offerors an opportunity to clarify any questions concerning the request for proposals (RFP).

The contract contemplated by the RFP would be for one year with 9 one-year options. The contract would also include an option to purchase the system.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center Florida 32899
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APR 1/77

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For Release:

A. H. Lavender
305 867-2468

April 1, 1977

RELEASE NO: KSC 87-77

MARCH NASA TOURS VOLUME WAS 114,845

KENNEDY SPACE CENTER, Fla.--NASA Tours volume in March was 114,845, raising total patronage for the first three months of 1977 to 283,734.

March volume, highest of any 1977 month, was 2.8 percent below the March, 1976 level. The three month 1977 total was 29,128, or 9.3 percent, below January - March, 1976 volume.

Tour patrons have an opportunity to enter the Vehicle Assembly Building where Space Shuttle vehicles will be prepared, view the Apollo/Saturn V displayed near the VAB, drive around Complex 39's Pad A where preparations for Shuttle operations are underway and tour Cape Canaveral Air Force Station.

NASA Tours originate at the Kennedy Visitors Center, accessible from the NASA Causeway off U. S. Highway 1 south of Titusville, and via State Road 3 from Merritt Island.

The visitors center features displays, exhibits, space science lectures and space movie showings, all provided free to the public, with continuous activities in the main building and a new Hall of History, opened during 1976.

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APR 5 1977

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center Florida 32899
AC 305 867 2468

Charles T. Hollinshead
305 867-2201

For Release:
April 5, 1977

RELEASE NO: KSC 88-77

MILES ROSS RESIGNS AS KSC DEPUTY DIRECTOR

KENNEDY SPACE CENTER, Fla.--Kennedy Space Center Director Lee R. Scherer announced today the resignation of his Deputy Director, Miles Ross.

Ross has accepted the position of Regional Manager in Europe for TRW Systems International, Inc. He will assume his new duties in early May.

Scherer accepted the resignation with deep regret, noting that "Mike has been a very strong deputy. He has played a vital role in the development of KSC since joining NASA in 1967. His knowledge and background and his good judgment have been invaluable to me in the management of the Center."

Ross was with TRW for 11 years prior to joining NASA. He was project manager of the Air Force Thor and Minuteman missile systems for TRW's Florida Operations. He later became Director of Flight Operations and was Manager of TRW Florida Operations at the time he was named Deputy Director for Operations at Kennedy Space Center in 1967. He was appointed to his present position of Deputy Director in 1970.

"This was a very difficult decision," Ross said in announcing his resignation to KSC management personnel. "It is particularly difficult because of the fine people we have here to work with."

Ross will be stationed in Brussels, Belgium. He and his wife, Patricia, are long time residents of Cocoa Beach where both have been active in civic and social affairs. The Rosses have four sons, Jonathan, Robert, Tony, and Andy.

A successor to Ross' position at Kennedy Space Center has not been named.

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APR 14/77

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

Mark Hess
305 867-2468

For Release:
April 14, 1977

RELEASE NO: KSC 91-77

KENNEDY SPACE CENTER AWARDS GRANT TO KENTUCKY STATE UNIVERSITY

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$39,812 grant to Kentucky State University, Frankfort, Ky., to continue research on the effects of prolonged exposure of experimental animals to moderate deviations from the normal atmospheric level of oxygen.

Much study has been conducted on the effects of short-time exposures to 100 per cent oxygen for man and some experimental animals. But little is known about prolonged exposures to oxygen at low to moderate concentrations. Kentucky State was awarded an original grant in March 1974, to initiate a study.

Since that time, Kentucky State has made significant discoveries that may be useful to NASA in planning atmospheres for future manned space missions; particularly with the prospects of long-term missions aboard the Space Shuttle Orbiter, and more distant possibilities such as space colonies.

Using vinegar flies as subjects for the experiments, research has thus far shown that higher levels of oxygen have drastically shortened the life span of the flies, while lower levels have greatly reduced their reproductive capabilities.

Genetic research with the vinegar flies suggests it may someday be possible to identify individuals who are better adapted genetically to survive in abnormal oxygen environments.

Study under the new grant will investigate the secondary gas effect--the ability of nitrogen to prevent damage to the breathing passage cells by supporting them after the oxygen has been absorbed--and the damage to brain and lung tissue by high oxygen concentrations which may be an accelerated rate of normal aging effects.

The \$39,812 award brings the total amount of KSC's grants for Kentucky State's study to \$138,752.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867 2468

A. H. Lavender
305 867-2468

For Release:
April 14, 1977

RELEASE NO: KSC 92-77

SPACEPORT CONTRACT TO ROCKWELL INTERNATIONAL

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$95,025,000 contract to the Space Division, Rockwell International Corporation, Downey, Calif.

The cost plus award fee contract, signed April 7, covers the period from January 1, 1977 through March 31, 1980, and provides for Rockwell participation in activation of Space Shuttle facilities and systems and for Orbiter support during checkout, launch and post-flight operations for the first six Space Shuttle missions.

The contract also provides for Rockwell to support Orbiter post-flight operations at NASA's Dryden Flight Research Center, Edwards, Calif., following landings there. The Orbiter will land at Dryden following each of the first four missions.

Rockwell will have primary responsibility for activation of facilities and systems required for Orbiter and Space Shuttle Main Engine processing, including systems in the Orbiter Processing Facility, Vehicle Assembly Building High Bay 1, Pad A and Hypergol Maintenance Facility areas.

Additional tasks assigned to Rockwell under the contract are fabrication of hypergol valve complexes and the design, fabrication, installation and activation of Orbiter communications and tracking station checkout equipment in the Orbiter Processing Facility.

The first Space Shuttle launch is scheduled in 1979.

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NASA News

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Dick Young
305 867-2468

For Release:
April 14, 1977

Trudy Tiedemann
Dryden Flight Research Center
305 258-3311

RELEASE NO: KSC 93-77

JET FLIGHTS UNDERWAY TO SEEK OUT BUG IMPACTS

KENNEDY SPACE CENTER, Fla. --A small jet transport out of NASA's Dryden Flight Research Center at Edwards, California, is flying in Florida to gain more information on the effect of insect impacts on the leading edges of aircraft wings.

The plane is being operated out of the Kennedy Space Center's aircraft facility at Patrick Air Force Base during the weeks of April 11-18. The flights are directed at seeking out bigger and more varied types of insects.

The program is being jointly conducted with NASA's Langley Research Center, Hampton, Virginia, and is part of the overall NASA Aircraft Energy Efficiency Program which is aimed at developing a 1985 transport with a potential 20 to 40 per cent fuel savings.

The advanced, long range aircraft will probably utilize laminar flow control technology which is dependent upon smooth air flow over the wings. However, it has been found that impacted insects which stick to the leading edges of the wings can trip the air flow and cause the flow to become turbulent. This would cancel out the increased efficiency which would be possible with laminar flow.

The small jet transport, equipped with a modified wing, has been flying in the Southern California area over alfalfa fields and sewage ponds, etc., to impact a large number of insects. On a typical flight, the aircraft then lands and the insect impacts on several specially coated panels on the wings are documented and measured.

The aircraft is then flown to a high altitude, high speed cruise condition where the effects of the impacts can be determined on the air flow.

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Page 2
KSC 93-77

It is hoped that by flying in the Kennedy Space Center area in Florida and possibly in June or July at the Johnson Space Center in Houston, Texas, a different type size or quantity of insects can be encountered.

More extensive testing can then be done on materials and methods which will prevent impacted insects from adhering to the leading edges of the wings.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

May 3, 1977

RELEASE NO: KSC 100-77

NASA TOURS PATRONAGE CONTINUES HEAVY IN APRIL

KENNEDY SPACE CENTER, Fla.--More than 103,700 visitors took guided bus tours of NASA's Kennedy Space Center and adjacent Cape Canaveral Air Force Station during April.

The 103,720 tour patrons during the month marked a decline of 3.5 percent in comparison with the 107,450 of April, 1976.

The April tour patronage brought the cumulative visitation for 1977 to 387,454, 7.8 percent below the 420,402 taking the tours during the first four months of 1976.

Tour volume exceeded 5,000 on six of the nine days between April 5-13, reflecting the Easter holiday and spring vacations from school.

The tour of the Brevard aerospace complex is among the state's most popular tourist attractions, offering glimpses of past accomplishments in space and preparations for the Space Shuttle, a keystone in the revolutionary new transportation system which will offer economical and routine access to space.

The Space Shuttle is scheduled for its first orbital flight from KSC in the spring of 1979 and many of Apollo/Skylab Launch Complex 39's massive facilities have already been reshaped for their new roles.

The many exhibits, space films and lecture demonstrations at the KSC Visitors Center are open to the public without charge. The guided bus tours are available for a nominal fee.

The Visitors Center is accessible via the NASA Causeway located two miles south of Titusville on U. S. Route 1 and State Road 3 on Merritt Island.

The Visitors Center and tours are operated every day of the year with the exception of Christmas.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Dick Young
305 867-2468

May 9, 1977

RELEASE NO: KSC 101-77

SPACEPORT HYPERBARIC CHAMBER TO BE LOANED TO UNIVERSITY OF FLORIDA COLLEGE OF MEDICINE

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center's hyperbaric chamber has been loaned to the College of Medicine at the University of Florida in Gainesville for hyperbaric medicine and research.

Located in the Operations and Checkout Building in the KSC Industrial Area, the hyperbaric chamber was designed for treatment of astronauts if decompression sickness - "the bends" - should occur during their participation in manned altitude chamber tests of the Apollo spacecraft.

With completion of the Apollo Soyuz Test Project - a manned space mission with the Soviet Union - in the summer of 1975, there was no operational requirement for the altitude and hyperbaric chambers and all chambers were deactivated.

The hyperbaric chamber was available to the public for treatment of decompression sickness from February, 1968, through August 15, 1975, and a total of 13 patients - all of them SCUBA divers - were treated at the Center during that period.

The loan agreement extends through December 31, 1979, unless extended by mutual agreement of KSC and the University of Florida.

The original cost of the mobile hyperbaric unit was in excess of \$80,000 and the University of Florida is responsible for the costs of maintaining the chamber and training its operation personnel as well as transportation of the unit to and from Gainesville.

In medical terms, a hyperbaric chamber is defined as "a specially equipped pressure vessel used in medicine and physiological research to administer oxygen at elevated pressures."

Since their deactivation, the altitude and hyperbaric chambers have been preserved so that they may be reactivated if required for Space Shuttle activities.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

May 17, 1977

RELEASE NO: KSC 104-77

RELEASED IN CONJUNCTION WITH NASA HEADQUARTERS

VIRGINIA FIRM AWARDED KENNEDY CENTER SUPPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--The National Aeronautics and Space Administration has selected Computer Sciences Corp., (CSC) Falls Church, Va., for the award of a contract for communications and instrumentation support services at the John F. Kennedy Space Center, Fla. RCA is expected to be a major subcontractor to CSC.

Kennedy Space Center is NASA's launch site for the Delta, Atlas and Titan expendable launch vehicles and will be the major launch site for the Space Shuttle manned flights scheduled to begin in 1979.

Services to be performed embrace two separate categories. The first category, covering a three year period, is for the modification, installation, operation, and maintenance of the operational intercommunications systems, the operational television system, and the checkout, control, and monitor subsystem.

The second category, covering one year with options for two additional years, is for communications, measurements, telemetrics, computer services, data storage and retrieval, program planning, and reliability and quality assurance. Most of the work will be accomplished at the Kennedy Space Center.

The value for the first three years of the cost-plus-award-fee contract beginning June 1, 1977 is approximately \$41 million.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center Florida 32899
AC 305 867-2468

For Release:

Mark Hess
305-867-2468

May 18, 1977

RELEASE NO: KSC 105-77

SPACE TECHNOLOGY MAY LEAD TO EARLY DETECTION OF BREAST CANCER

KENNEDY SPACE CENTER, Fla.--Every year thousands of women are subjected to screening procedures for breast cancer which use potentially harmful x-rays. Many of these women go through the physical and emotional anguish of radical surgery in the treatment of this disease

Repeated x-rays have often been considered necessary because developing stages of breast cancer are sometimes undetectable by doctors who examine the earliest breast x-rays, making early diagnosis more difficult and sometimes allowing cancerous tissues to multiply until massive surgery is the only solution.

For two years engineers in the Data Analysis Facility at NASA's John F. Kennedy Space Center, Fla., have been working on the problem. The experimental process involves techniques similar to those originally developed to analyze imagery transmitted from Landsat satellites. By applying these space techniques to the medical field, engineers have developed a method which may enable doctors to detect early stages of breast cancer and to determine the likelihood that a woman will ever develop breast cancer.

This experimental technique for early cancer detection is a product of x-ray enhancement -- the ability of computers to enhance or make more visible information from x-rays not ordinarily detectable by the human eye.

Trained radiologists who examine x-rays work with a built-in handicap -- the human eye. The eye has difficulty in detecting small density changes or changes in the gray shades of the intensity spectrum's upper density region. Most x-ray data is within this upper density region.

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The human eye -- even the most highly trained one -- can detect about 32 different shades of gray at best. For radiologists this means that much of the information contained on an x-ray is invisible to them.

The need is for a method of putting these undetectable shades of gray in a better perspective -- enhancing them so they are easily visible.

This is where the Data Analysis Facility steps in with its General Electric "Image 100" multi-spectral image analyzer. It is a computer-controlled system which extracts and classifies information about an image much better than can be done by human means.

Shades that were previously invisible to a doctor's eyes are now analyzed in much more detail. This makes significant information visible much earlier, improving prospects for an earlier diagnosis.

The special optical tool that begins this process is called a microdensitometer. Far superior to the human eye, it can detect 256 shades of gray with great accuracy.

The microdensitometer scans a photographic image - such as an x-ray-and then puts the information into computer language. The information is then fed into the Image 100 with instructions to enhance the low visibility gray shades. After classifying the gray shades which make up an image, the computer displays them in a way that is more meaningful to the radiologist.

Robert L. Butterfield, an electronics engineer at the Data Analysis Facility, has been working with the Image 100 and a Titusville, Fla., radiologist, Dr. William L. Walls, for two years on a process in which mammograms (breast x-rays) can be automatically analyzed to detect early stages of breast cancer before radical surgery is needed.

The current goal is to try to develop a computerized method of separating those women who are in a low risk group (least possibility of developing breast cancer) from those in a high risk group (high possibility of developing breast cancer). If this method becomes feasible, it should reduce the need for repetitive screening-type mammograms.

The new x-ray analyzing system, if the development effort is successful, may allow separation of women into low, medium and high risk groups, allowing radiologists to concentrate on the mammograms from the high risk group.

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Medical persons and engineers hope that some day this method may lead to techniques that would allow detection of very early breast cancer. Depending on the rate of change in x-ray gray shades, the yardstick doctors use to diagnose various stages of breast cancer, the computer may yield information enabling the radiologist to determine if very early indications of breast cancer are present.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center Florida 32899
AC 305 867-2468

Mark Hess
305 867-2468

For Release
May 25, 1977

RELEASE NO: KSC 108-77

UNIVERSITY OF FLORIDA RECEIVES GRANT TO CONTINUE LIGHTNING STUDY

KENNEDY SPACE CENTER, Fla. --NASA's John F. Kennedy Space Center has awarded a \$16,200 supplemental grant to the University of Florida for continuation of a study on the effects of lightning strikes.

Data gathered from the study could ultimately lead to the development of an operational system which would be used by the Spaceport to forecast lightning hazards and determine damage extent to remote structures or aerial and underground cables.

The value of this study has its greatest application in regards to conducting all aspects of Space Shuttle processing, launch and landing operations safely and efficiently under marginal environmental conditions, said William Jafferis, staff assistant to Space Vehicle Operations Director and technical monitor for the study.

University of Florida personnel have been doing research under this grant involving various aspects in the study of lightning since 1973. Acting as consultants, they have been working with engineers from KSC's Space Vehicle Operations and Information Systems directorates using advanced lightning instrumentation presently at KSC.

The principal instrument to be used in the forthcoming studies is the Lightning Detection and Ranging (LDAR) device. It is designed to measure the sources of high frequency radiations being emitted from lightning activity going on within a cloud. Under the supplemental grant, the LDAR system will be modified, enabling it to locate cloud-to-ground lightning strikes to any KSC facility.

The system will also measure precisely the intensity of a lightning strike, thus making damage assessment to buried and aerial cables, or systems tied to the cables, accurate and immediate. Data obtained from these studies will be invaluable in determining Space Shuttle ground support equipment susceptibility to damage from cloud-to-ground lightning.

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A secondary goal of the supplemental grant is the construction of a base-line lightning location system using four TV cameras. It will be used to determine the accuracy of other lightning detection instruments located throughout the Center.

"Only a few years ago, if a launch complex was struck by lightning, the vehicle would be removed and retested to determine how much damage, if any, it had sustained," Jafferis explained.

"But with the development of this operational system, every characteristic of a lightning strike, where it hit, how hard it hit and what it hit--even to the extent of knowing whether it struck a vehicle or damaged some underground cable--will be known immediately. And the entire KSC complex can be monitored from one base facility."

The \$16,200 additional grant, brings the total amount awarded to the University of Florida for the lightning study program to \$55,196.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Mark Hess
305 867-2468

May 24, 1977

RELEASE NO: KSC 109-77

KSC HONORS SMALL BUSINESS FIRMS DURING SMALL BUSINESS WEEK

KENNEDY SPACE CENTER, Fla.--Since fiscal year 1970, NASA's John F. Kennedy Space Center has awarded more than \$100 million in contracts to small business firms. During the week of May 22-28, KSC joins other NASA centers and other government agencies for Small Business Week, honoring the country's more than nine million small business firms.

Jack Dryer, industry advisor and small business specialist of the KSC Procurement Office, reported that KSC issued \$22 million and 11,717 awards and contracts to small businesses in fiscal year 1976.

About \$11 million in awards went to Florida-based firms, with many of the contracts being granted to local businesses. At the midway point of this fiscal year, KSC has awarded over \$21 million to small business firms.

KSC has also been a leading NASA center in the granting of contracts to minority owned firms. Dryer said that in 1976, the Spaceport awarded \$2.6 million to minority firms, and over \$2.25 million this year.

Dryer pointed out another provision was initiated this year by KSC to aid minority businesses. For all KSC construction contracts totalling over \$500,000, the prime contractor must subcontract at least 20 per cent of its total subcontractor amount to minority firms.

Small businesses currently under KSC operate the Center's technical and research library, provide janitorial services, furnish printing and reproduction services and handle the mail and distribution duties. KSC also maintains a number of small business firm construction contracts.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Al Lavender
305 867-2468

May 24, 1977

RELEASE NO: KSC 110-77

KSC SUNDAY DRIVE THROUGH TOURS RESUMED

KENNEDY SPACE CENTER, Fla.--Sunday drive through tours of the Kennedy Space Center will resume May 29.

Visitors will be able to enter the space center from Rt. 3 on Merritt Island or down Rt. 405 from U.S. 1. They will be able to drive through the KSC industrial area and the Cape Canaveral Air Force Station.

Gates will be open from 9 a.m. to 3 p.m. every Sunday.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867 2468

Al Lavender
305 867-2468

For Release:

May 26, 1977

RELEASE NO: KSC 111-77

KSC EXTENDS PLANNING RESEARCH CORP. CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$25,720,364 contract extension for engineering support services to Planning Research Corporation, McLean, Va.

The 12-month cost plus award fee contract extension provides for Planning Research Corporation to continue design engineering support services for the Space Shuttle program and other activities for which KSC's Design Engineering Directorate has design responsibilities from May 20, 1977 through May 19, 1978.

Work is performed at the Kennedy Space Center and Cape Canaveral Air Force Station in Florida and at KSC's Western Launch Operations Division, Vandenberg AFB, and NASA's Dryden Flight Research Center, Edwards AFB in California.

The contract extension brings the total amount of the contract, originally awarded on May 20, 1974, to \$72,616,061. The company employs more than 1,100.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center Florida 32899
AC 305 867-2468

For Release:

Bill O'Donnell
202-755-0816

June 2, 1977

RELEASE NO: 77-113

NASA SELECTS BOEING AS GROUND SYSTEMS OPERATIONS CONTRACTOR FOR KENNEDY SPACE CENTER

NASA has selected Boeing Services International, Inc., Seattle, Wash., a wholly-owned subsidiary of Boeing Aerospace Corp., for final negotiations leading to the award of a cost-plus-award-fee contract to provide ground systems operations in support of NASA launch operations under the management of the Kennedy Space Center, Fla.

Boeing also will provide some support to Air Force Operations at the Air Force Eastern Test Range and Cape Canaveral Air Force Station, Fla.

The Kennedy Space Center is NASA's East Coast launch site for expendable launch vehicles (Delta and Atlas) and the Space Shuttle scheduled to be launched in 1979.

Services to be performed beginning July 1, 1977 consist primarily of the operation and maintenance of launch systems and facilities. The contractor's estimate of the contract value for the first three years, including the maximum award fee, is approximately \$80,500,000.

Bendix Launch Support Division of Bendix Aerospace Electronics Group, Arlington, Va., was also a bidder.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

A. H. Lavender
305 867-2468

For Release:
July 1, 1977

RELEASE NO: KSC 125-77

ARCHITECT-ENGINEERING CONTRACT AWARDED TO JACKSONVILLE FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$480,193 fixed-price contract to Reynolds, Smith and Hills, Architects, Engineers, Planners, Inc., 4019 Boulevard Center Drive, Jacksonville, Florida.

The contract, extending from June 1, 1977 through November 28, 1977, provides for the architect-engineering firm to prepare specifications and drawings for modification of Complex 39B to adapt it for Space Shuttle launch operations.

The modification will result in a configuration of the launch pad and complex facilities such as the Shuttle Service and Access Tower similar to that of Complex 39A, where modifications are underway.

Construction of Complex 39B, second of two Apollo/Saturn launch facilities, was completed in late 1967. Apollo 10 was launched from the complex as were the manned Skylab 2, 3 and 4 missions and the U.S. spacecraft of the Apollo Soyuz Test Project.

The initial launch of the Space Shuttle is scheduled in 1979.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

Mark Hess
305 867-2468

For Release:
July 1, 1977

RELEASE NO: KSC 127-77

SPACEPORT AGAIN HOSTS THUNDERSTORM SCIENTISTS

KENNEDY SPACE CENTER, Fla.--Last summer, leading meteorologists and atmospheric physicists from across the United States and abroad converged on NASA's John F. Kennedy Space Center for the most extensive study on the electrical characteristics of thunderstorms that has ever been conducted. Now, the Center is host to the researchers for the second consecutive year.

The 1976 program resulted in the accumulation of a wealth of new data which help explain the phenomena that cause electrical charges in cumulo-nimbus cloud formations, electrical discharges within and between clouds, and from clouds to the earth's surface. In addition, the 1976 program laid the foundation for subsequent studies here this summer and in 1978.

The world's leading experts on thunderstorms are again gathering at KSC for "TRIP 77" (Thunderstorm Research International Program 1977), and will remain through August 15 to continue their research on lightning and thunderstorms and the hazards they provide.

Twenty-one principal investigators with their associates, representing many of the country's leading educational institutions and research organizations, will be involved in the study during the summer. A total of over 85 experimenters will be participating.

Resources of KSC associated with lightning and some Air Force Eastern Test Range instrumentation will be used to provide data required by the experimenters. These include KSC's 80-square-mile electric field measuring system, developed during the Apollo program for detecting the buildup of electrical charges in thunderclouds that might interfere with space vehicle launch operations, and NASA-6, KSC's C-45 instrumented meteorological aircraft that has been used in previous lightning studies.

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The AFETR weather radar and KSC's storm detection meteorological radar, including camera and digitized automatic radar tracking systems; the Cape launch pad lightning warning systems; a weather information network display (WIND) system; a satellite imagery acquisition system with equipment for processing weather satellite pictures; an automatic picture transmission (APT) recording system; timing and camera systems, both optical and TV, are also used.

Both the National Oceanic and Atmospheric Administration's (NOAA's) Geosynchronous Operational Environmental Satellite (GOES) and a Department of Defense weather satellite will provide imagery for scientific use. In addition, the National Weather Service's KSC office will be manned to provide forecasting and other meteorological services.

The planned experiments cover almost every imaginable subject of study. They include electric field measurements of discharges within storm clouds, study of the relationship between electric fields at the earth's surface and those within active thunderclouds, location of the lightning charge "center" and its correlation with the storm's physical structure, measurement of the waveshapes of lightning strokes, determination of the electrical inflow and outflow of clouds, measurement of lightning stroke velocities near the ground with their corresponding electric and magnetic fields, study of the overall evolution of lightning activity at KSC, establishing the correlation between airborne and ground lightning test measurements.

Study of the structure of motion and radar reflectivity fields inside thunderstorms, examination of the radiated waveforms from lightning for characteristics that may be indicative of storm type, investigation of thunderstorm behavior over the ocean, time lapse photography of cloud behavior, including lightning discharges as they take place; flight evaluation of a lightning detector instrument package and the conducting of simulated lightning ground tests.

In addition to the investigations of the scientific community, KSC is conducting two of its own experiments during the lightning study. The first involves a lightning triggering project to initiate and direct natural lightning to a specific target. This capability will allow KSC to verify, under controlled conditions, the lightning protection of a structure and its associated ground support equipment without having to wait until a natural stroke happens to strike the location.

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KSC also operates its LDAR (Lightning Detection and Ranging) system, as it did in 1976. The objectives of this system are to locate electrically active areas of a cloud, map the spacetime history of the electrical discharges, determine the physical relationship between electrically active areas and rain areas of a cloud, detect and locate cloud to ground lightning strikes and determine associated wave form characteristics.

As part of TRIP 77, KSC and the University of Florida are conducting a joint experiment using television cameras to locate the coordinates of all cloud-to-ground lightning flash ground-contact points.

Organizations participating in the project and principal investigators are given below.

NOAA Environmental Research Laboratory (3 projects) - Dr. Heinz Kasemir, William L. Taylor and Dr. David Rust.

New Mexico Institute of Mining and Technology (2 projects) - Dr. Marx Brook and Professor Charles B. Moore.

Rice University - Dr. Arthur A. Few.

University of Florida (2 projects) - Dr. Martin A. Uman.

State University of New York at Albany (2 projects) - Dr. Richard E. Orville and Dr. Bernard Vonnegut.

University of Arizona - Dr. E. Phillip Krider.

University of Miami - Dr. Robert M. Lhermitte.

Massachusetts Institute of Technology - Dr. Ralph Markson.

NASA Goddard Space Flight Center - Dr. David M. LeVine.

NASA Marshall Space Flight Center - P. Marrero.

NASA Johnson Space Center - Donald D. Arabian.

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Page 4
KSC 127-77

Stanford Research Institute - Dr. J. Nanevich.

Federal Aviation Administration, Department of Transportation (2 projects) - Frank Coons and R. Kalafus.

Air Force Flight Dynamics Laboratory (2 projects) - Lt. Robert Baum and V. Mangold.

Pennsylvania State University - Hans Panofsky.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

July 12, 1977

RELEASE NO: KSC 128-77

EXPERIMENTAL PLANE USES NASA-DEVELOPED TECHNOLOGY

KENNEDY SPACE CENTER, Fla.--It cruises high above traffic-jammed roads at up to 200 miles per hour, has a range of about 800 miles and gets an enviable 38 miles per gallon of gas.

"It" is the home-built VariEze ("very easy") airplane constructed for an investment of some \$6,000 and six months of time by John Murphy of the Kennedy Space Center's Technology Utilization Office.

In many respects, John's new plane is an oddball. Except for the engine and engine mount, the plane is built entirely of fiberglass and styrofoam. Long but narrow nose-mounted canards and a "pusher" engine provide the illusion that the plane and the occupants of its teardrop-shaped cabin are flying backwards.

Despite - or perhaps because of - its strange appearance, the plane incorporates several technological advancements, including a NASA-developed winglet which increases efficiency by unwinding wingtip vortex and reducing drag.

The winglets - vertical fins on each wing tip - increase the aircraft's efficiency by approximately 8 percent. The winglets were recently developed by Dr. Richard Whitcomb of NASA's Langley Research Center, Hampton, Va., and are already being used on a limited number of new aircraft.

Murphy built the plane at his home in Cape Canaveral and cut the first piece of foam on December 8, 1976. Work was completed on June 12 and he took it up from TiCo Airport for its first flight on June 30.

Some Brevard residents may have already spotted Murphy's pride and joy. He's now building up the 50 hours flying time required by the Federal Aviation Agency so that he can fly it to the annual meeting of the Experimental Aircraft Association in Oshkosh, Wisconsin, in late July and early August.

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Making the flight with him will be his youngest son, Steve, 13.

"Thousands of experimental and factory-built aircraft will be there," said Murphy. "We're looking forward to it."

It was at last year's show that John was exposed to the unique plane, designed by Bert Rutan of Mojave, California. The plane does not come as a kit; Rutan provides only plans and guidance.

For Murphy, the work went faster than for most who've undertaken the project. He's been flying for 30 years and owns another aircraft which he rebuilt.

Wing construction is much like that of a surfboard. The Shape and airfoil are cut out of styrofoam and then covered with fiberglass. Internal strength is enhanced by fiberglass spars and shear webs.

"It's a great plane to fly," said Murphy.

The aircraft weighs only 630 pounds and is powered by a 100 horsepower Continental aircraft engine. Designed primarily as a high speed, cross-country aircraft, it requires 1,000 feet for take-off and will land in about 2,000 feet. Cruise speed with two passengers is 200 miles per hour.

Murphy described its high altitude performance as "good" and noted that it has a climb rate of 1,500 feet per minute.

The plane's cabin is somewhat less spacious than a 747, DC-10 or other wide-body jet. How's the ride?

"Although small inside," said John, "it's very comfortable."

Much of the plane's odd appearance is due to the forward-mounted canards. These - rather than the usual elevators in the tail assembly - provide pitch control. The nose wheel is retractable; the main gear are not.

John's flying and technical background helped with the plane's construction. He's a 1957 graduate of Georgia Tech. With NASA since 1964, John's function at KSC is to serve as the focal point for new technology developed here and making it available to American industry.

Completing the 50-hour test program required by the FAA has had its fringe benefits during the hot Florida summer.

"I usually climb up to about 6,500 feet where it's cool," said Murphy. "It's only about 65 degrees up there."

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Page 3

As of July 11, Murphy has logged 24 of the 50 hours required by the FAA before his aircraft is cleared for normal use.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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For Release:

Dick Young
305 867-2468

July 18, 1977

RELEASE NO: KSC 131-77

SIX FIRMS RESPOND TO SPACEPORT BID REQUESTS

KENNEDY SPACE CENTER, Fla.--Six firms have responded to requests by the Kennedy Space Center for proposals on a printing, reproduction and documentation support services contract.

The responses came from Data Graphics Services Inc., Fort Lauderdale, Fla.; Information Services Inc., Cocoa Beach, Fla.; Kaufman and DeDell Printing Inc., Syracuse, N. Y.; McGregor-Werner Inc., Washington, D. C.; Robinson's Printing Co. Inc., Huntsville, Ala., and Systems Publications Inc., Seat Pleasant, Md.

The effective date of the contemplated new contract would be December 1, 1977, and the duration will be three years.

Services to be rendered under the proposed contract are now provided by McGregor-Werner and the Boeing Aerospace Co.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Dick Young
305 867-2468

July 25, 1977

RELEASE NO: KSC 136-77

FOUR FIRMS SUBMIT SPACEPORT TELEPHONE PROPOSALS

KENNEDY SPACE CENTER, Fla.--Four firms have responded to requests by the Kennedy Space Center for proposals for an administrative telephone system.

A solicitation which closed July 22 was sent to 27 companies and required that the successful contractor furnish, install, operate and maintain an automated dial telephone system, including basic switching equipment, telephones, switchboards and consoles, interior wire and cable, ancillary equipment and apparatus housing.

The contract contemplated under the solicitation would lease the system for a 10-year period and include a purchase option.

Companies submitting proposals were Southern Bell Telephone and Telegraph Co., Miami, Fla.; Northern Telecom Inc., Memphis, Tenn.; G. T. E. Automatic Electric, North Lake, Ill., and Independent Business Telephone Co. of Florida, Tampa, Fla. Two proposals were submitted by Southern Bell.

Service has been provided by Southern Bell since 1963.

The proposals will be evaluated by a Source Evaluation Board prior to selection of the successful contractor.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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Mark Hess
305 867-2468

For Release:

October 3, 1977

RELEASE NO: KSC 156-77

IBM TO BE AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center will award a \$3,203,666 contract to International Business Machines Corporation for the development of a test system that will check out Space Shuttle cargoes for their compatibility with the Shuttle Orbiter before they are loaded into the Orbiter's payload bay.

Called CITE, for Cargo Integration Test Equipment, the system will simulate exactly the Orbiter's electrical and electronic environment. CITE will stimulate the payloads, monitor their responses, and record the data. The payload, not knowing whether it is actually loaded to the Orbiter bay or simply hooked up to the CITE system, will behave the same as it would during actual flight.

This capability is needed because of the fast turn-around times planned for Shuttle missions. Being able to have payloads all ready to plug into the Orbiter without extensive testing after it is aboard is necessary to staying on schedule.

CITE operations will be conducted from either the Spaceport Assembly and Encapsulation Facility #1 (SAEF #1) or the Operations and Checkout Building (O&C). The CITE equipment will be mobile so it can be used in SAEF #1 to checkout cargoes in a vertical position and the O&C building to test horizontal payloads.

The first manned orbital flights of the Space Shuttle are scheduled to be launched from here beginning in March, 1979. Because there is no payload on the first Orbital Test Flight, the CITE system will not be operational until the second flight.

Included in the \$3,203,666 contract is an option for increasing the capabilities of the CITE project to provide a complete system in both SAEF #1 and the O&C Building.

The cost plus fixed fee contract covers the period between October 1, 1977, and July 1, 1980.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

✓
December 9, 1977

RELEASE NO: KSC 207-77

SPACEPORT NEGOTIATES WITH TWO FIRMS FOR PHONE CONTRACT

KENNEDY SPACE CENTER, Fla.--Competitive negotiations with two firms leading to the selection of a contractor to provide an administrative telephone system at NASA's John F. Kennedy Space Center are underway.

The companies which remain in competitive range for selection as the KSC contractor are G. T. E. Automatic Electric, Northlake, Ill., and Northern Telecom, Inc., Memphis, Tennessee.

The automatic dial telephone system will include basic switching equipment, telephones, cabinets, switchboards and consoles, interior wire and cable, and any ancillary equipment necessary for proper operation of the system.

The contract will provide for lease of the system for a 10-year period and will include a purchase option.

Other firms that submitted proposals to provide the administrative telephone system were Southern Bell Telephone and Telegraph Company, Miami, Fla., and Independent Business Telephone Co. of Florida, Tampa, Fla.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

A. H. Lavender
305 867-2468

For Release:
December 21, 1977

RELEASE NO: KSC 211-77

KENNEDY SPACE CENTER SCHEDULES 16 LAUNCHES IN 1978

KENNEDY SPACE CENTER, Fla.--Sixteen launches, including eight Deltas and eight Atlas Centaurs, have been scheduled in 1978 by the Kennedy Space Center's Expendable Vehicles Directorate.

Directorate personnel will also provide support in connection with three Atlas-F space launches from Vandenberg Air Force Base in California.

"With sixteen launches scheduled in 1978, the Expendable Vehicles workload will be heavy throughout the year. The tentative schedule provides for three January launches and two each in some other months," said Director George F. Page.

Seven of the Deltas will be launched from Complex 17, Cape Canaveral Air Force Station, and one from a KSC launch pad at Vandenberg AFB. All of the Atlas Centaurs will be launched from Complex 36 at the Cape.

First launch of the year will be INTELSAT IV-A F-3, one of a series of International Telecommunications Satellite Organization spacecraft. It is scheduled for launch January 6 on an Atlas Centaur.

A second Atlas Centaur with FLTSATCOM-A, the first of a series of geosynchronous orbiting spacecraft in a new Navy world-wide communications system, is scheduled January 19.

An International Ultraviolet Explorer (IUE) is scheduled for launch on a Delta from Cape Canaveral on January 25. In geostationary orbit above the Equator, IUE will obtain data on ultraviolet emissions from stars and other stellar sources.

The IUE spacecraft was built at NASA's Goddard Space Flight Center. The European Space Agency and Great Britain's Science Research Council will participate in IUE experiments.

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LANDSAT-C is scheduled for launch on a Delta from Vandenberg AFB on March 5. The picture-taking satellite will join LANDSAT-1 and LANDSAT-2 in polar orbit to expand NASA's program for cataloging the Earth's resources and monitoring changing environmental conditions.

Launch of an experimental broadcasting satellite, JAPAN-BSE, for research leading to the orbiting of future large-scale broadcasting satellites by the island nation, is scheduled on a Delta from Cape Canaveral on March 23.

The launches of INTELSAT IV-A F-6 on an Atlas Centaur and a backup European Space Agency (ESA) Orbital Test Satellite (OTS) on a Delta from Cape Canaveral are scheduled in April. An earlier attempt to orbit an OTS failed when Delta-134 exploded shortly after liftoff on September 13.

PIONEER VENUS-A, the first of two missions to examine the Venusian atmosphere and the planet's weather, is scheduled for launch on an Atlas Centaur in May. PIONEER VENUS-A's mission is to place its spacecraft in orbit to examine the upper atmosphere.

PIONEER VENUS-B will be launched on an Atlas Centaur in August. A multi-probe, it is scheduled to enter the Venusian atmosphere six days after arrival of the orbiter. The spin-stabilized multi-probe spacecraft consists of a bus, a large probe and three identical small probes, each with scientific instruments.

The probes will be released from the bus 20 days prior to arrival at Venus. The large probe will conduct sounding of Venus' lower atmosphere, measuring clouds as well as atmospheric structure and composition. The smaller probes, entering at widely separated points, will provide information on the general circulation patterns of the lower atmosphere.

A Japanese spacecraft that would be launched on a Delta from Cape Canaveral if an earlier Japanese mission is not successful, is on the schedule for June. If the Japanese spacecraft is not required, ESA GEOS-2, a scientific satellite, will be launched on a Delta in June. GEOS-1, launched from the Cape on April 20, did not reach its intended orbit, although the spacecraft is transmitting data back to Earth and the mission is listed as partially successful.

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COMSTAR-D3, a domestic communications satellite, will be launched for COMSAT General Corporation on an Atlas Centaur in June.

Also scheduled for July launch is International Sun Earth Explorer-C (ISEE-C) on a Delta from the Cape. ISEE-C will be orbited at the libration point between the Earth and the Sun, a point in space where the force of gravity and dynamic force exert an equal pull. From there it will obtain data on solar wind similar to, but from a different location than, that obtained by ISEE-1 and ISEE-2. ISEE-1, developed by NASA, and ISEE-2, developed by ESA, were launched in tandem on a Delta on October 22.

NATO-IIIC, a North Atlantic Treaty Organization communications satellite, is on the launch schedule for the fourth quarter of 1978. Launch will be on a Delta from Cape Canaveral.

TELESAT-D, a domestic communications satellite that will be renamed ANIK-4 in orbit, will be launched for TELESAT Canada during the fourth quarter of the year. Launch will be on a Delta from Cape Canaveral.

High Energy Astronomy Observatory-B (HEAO-B) is scheduled for launch on an Atlas Centaur during the fourth quarter. HEAO-B will maneuver and point for long periods of time at selected celestial X-ray sources mapped earlier by HEAO-A and other X-ray spacecraft. HEAO-A was launched on August 12. Another FLTSATCOM spacecraft is scheduled for launch during the fourth quarter, also on an Atlas Centaur.

Scheduled for launch on Atlas-F rockets from Vandenberg AFB are SEASAT-1, a NASA polar orbiting spacecraft for global monitoring of the oceans and ocean phenomena, in May TIROS-N, a NASA polar orbiting experimental weather satellite, in July, and NOAA-A, a polar orbiting weather satellite for the National Oceanic and Atmospheric Administration, later in the year.

Two possible Delta callup launches are on the 1978 scheduled. If required to replace a presently operational spacecraft, Geostationary Operational Environmental Satellite-C (GOES-C) would be launched from Cape Canaveral, and NIMBUS-G, a NASA research satellite for testing sensors for oceanographic and meteorological monitoring, would be launched from Vandenberg AFB.

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1978 NASA LAUNCH SCHEDULE

<u>Date</u>	<u>Mission</u>	<u>Launch Vehicle</u>	<u>Complex</u>	<u>Remarks</u>
Jan 6	INTELSAT IV-A F-3	Atlas Centaur	36-B	Reimbursable
Jan 19	FLTSATCOM-A	Atlas Centaur	36-A	Reimbursable
Jan 25	IUE	Delta	17-A	
March 5	LANDSAT-C	Delta	WTR	
March 23	JAPAN BSE	Delta	17-B	Reimbursable
April	INTELSAT IV-A F-6	Atlas Centaur	36-B	Reimbursable
April	ESA OTS Backup	Delta	17-A	Reimbursable
May	SEASAT	Atlas-F	WTR	
May	PIONEER VENUS-A	Atlas Centaur	36-A	
June	*JAPAN Backup	Delta	17-A	Reimbursable
June	COMSTAR-D3	Atlas Centaur	36-B	Reimbursable
July	TIROS-N	Atlas-F	WTR	
July	ISEE-C	Delta	17-B	
August	PIONEER VENUS-B	Atlas Centaur	36-A	
4th Quarter	NATO-IIIC	Delta	17-B	Reimbursable
4th Quarter	NOAA-A	Atlas-F	WTR	Reimbursable
4th Quarter	TELESAT-D	Delta	17-B	Reimbursable
4th Quarter	HEAO-B	Atlas-Centaur	36-B	
4th Quarter	FLTSATCOM-B	Atlas-Centaur	36-B	Reimbursable

*If JAPAN Backup is not required, ESA GEOS-2 will be launched from Complex 17-A in June.

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

A. H. Lavender
305 867-2468

For Release:

December 21, 1977

RELEASE NO: KSC 212-77

VOYAGER LAUNCHES HIGHLIGHTED 1977 KSC ACTIVITIES

KENNEDY SPACE CENTER, Fla.--Two highly successful launches of Voyager spacecraft on lengthy missions to Jupiter and beyond were highlights of Kennedy Space Center activities in 1977.

Launch of the two Voyagers marked the final use by NASA of Titan-IIIC Centaur vehicles which also launched HELIOS spacecraft in 1974 and 1976 and two VIKINGS on year-long missions to Mars in 1975.

KSC's Expendable Vehicles Directorate also launched ten Deltas and three Atlas Centaurs from Cape Canaveral Air Force Station.

Eight of the Delta-launched missions were successful, one was listed as partially successful and one was unsuccessful. Of three Atlas Centaur launches in 1977, two were successful and one unsuccessful. No KSC launches were conducted at Vandenberg AFB during the year.

Chronologically, 1977 launches were as follows:

January 27--Launch of NATO IIIB into geosynchronous orbit over the Equator to serve as part of the communications system of the North Atlantic Treaty Organization. The booster was a Delta.

March 10--Successful orbiting by a Delta of PALAPA-B, the second domestic communications satellite for Indonesia, to complete the island nation's two-satellite communications system. Using the two satellites--PALAPA-A was launched on July 8, 1976--the Indonesian government is expanding its radio, telephone and television communications to cover some 3,000 inhabited islands of the nation's 13,000.

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April 20--Launch of the European Space Agency's (ESA's) GEOS satellite to study fields, plasma and particles. Although the Delta second stage spintable failed to spin up the third stage/spacecraft combination and the stage fired without effective stabilization, the spacecraft achieved an elliptical orbit. It is operational and is transmitting scientific data to the European Space Operations Center in Darmstadt, Germany. The mission is listed as partially successful.

May 26--Orbit of INTELSAT IV-A F-4 for the International Telecommunications Satellite Organization. The communications satellite was placed in geostationary orbit above the Equator at 19.5 degrees west longitude. The booster was an Atlas Centaur.

June 16--Placement of the National Oceanic and Atmospheric Administration (NOAA) Geostationary Operational Environmental Satellite-B (GOES-B) in orbit above the Equator by a Delta vehicle.

July 14--Launch of JAPAN GMS (Geostationary Meteorological Satellite) for the National Space Development Agency of Japan (NASDA). The spacecraft was placed in synchronous orbit at 140 degrees east longitude. The booster was a Delta.

August 12--Launch of High Energy Astronomy Observatory-A (HEAO-A), renamed HEAO-1, atop an Atlas Centaur on a mission to map X-ray sources of the universe and unravel some of the mystery surrounding pulsars, black holes, neutron stars, quasars and supernovae. Mission highlights include:

- Placement of the spacecraft in the desired circular orbit.

- Possible discovery by HEAO-1's powerful X-ray detectors of a suspected "black hole," the remains of a star so compressed that not even light can escape its gravity. The suspected black hole is called Circinus-1.

- Continuing search of the universe by HEAO-1 to map X-ray sources in preparation for the orbiting of HEAO-B, with instruments to lock on and study the identified X-ray sources, in 1978.

August 20--Launch of VOYAGER-2 on a mission that will take it within 384,000 miles of Jupiter on July 9, 1979, after passing near Jupiter's moons, Callisto, Ganymede, Europa and Amalthea, on its approach. Jupiter's gravity will then be used to sling-shot VOYAGER-2 on a circuitous trip

to fly within 22,800 miles of Saturn in August, 1981. Because it flies a slower trajectory, VOYAGER-2 will arrive at Jupiter about four months after VOYAGER-1, which was launched 16 days later. VOYAGER-2's arrival at Saturn will follow the arrival of VOYAGER-1 by about nine months. VOYAGER 2 will be 101,879,000 miles from Earth on January 1, 1978.

August 25--Successful launch of SIRIO, an Italian experimental communications satellite, into geosynchronous orbit.

September 5--Launch of VOYAGER-1, which will make its closest approach to Jupiter on March 5, 1979, and after flying within 2,400 miles of Saturn's moon, Titan, make its closest approach to Saturn on November 12, 1980. If VOYAGER-1's Jupiter and Saturn flybys are successful, NASA scientists have the option of using Saturn's gravity to send the spacecraft to faraway Uranus, which orbits the sun at a distance of 1,787,000,000 miles.

VOYAGER-1, which passed VOYAGER-2 some 78,000,000 miles from Earth on December 15, will be 103,236,000 miles from Earth on January 1, 1978.

A highlight of the two successful VOYAGER launches was the launch team's ability to ready a second vehicle for launch from the same pad within 16 days. By midnight of the VOYAGER-2 launch day, crews were at work readying VOYAGER-1. By 5 a.m. the next day the space vehicle was on the pad and by 4 p.m. it was ready for testing to begin.

September 13--Launch of ESA's Orbital Test Satellite (OTS) on a Delta was unsuccessful as the Delta vehicle exploded less than a minute into the mission.

September 29--Launch of INTELSAT IV-A F-5 was unsuccessful. The Atlas Centaur exploded early in the flight.

October 22--Launch of ISEE's-A and -B, now ISEE's 1 and 2, in tandem on a Delta. ISEE-1, developed by NASA, and ISEE-2, developed by ESA, are in a highly elliptical orbit where their instruments are obtaining previously unavailable data on the solar wind. The spacecraft will be joined in 1978 by a third ISEE spacecraft, to be placed in orbit at the libration point, a point in space between the Earth and Sun where the force of gravity and dynamic force exert an equal pull.

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Page 4
KSC 212-77

November 22--Successful launch of ESA METEOSAT. The geosynchronous satellite is ESA's contribution to a world-wide weather satellite system.

December 14--Successfully placed in geostationary orbit JAPAN CS, an experimental communications satellite, for the National Space Development Agency of Japan.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
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A. H. Lavender
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December 21, 1977

RELEASE NO: KSC 216-77

SPACEPORT TO SAVE ELECTRICITY, FUEL OIL DURING HOLIDAYS

KENNEDY SPACE CENTER, Fla.--Saving of more than 1.6 million kilowatt hours of electricity and 13,000 gallons of fuel oil will be achieved by the Kennedy Space Center during the holiday period as most government and contractor employees take annual leave between December 23 and January 3.

"By closing some buildings and turning off electricity in most areas the Center will not only conserve the electricity and fuel oil, but should save some \$53,000 in actual expenditures," said Charles A. Adams, KSC's chief of utilities engineering and operations.

Limited curtailment of Spaceport operations during the 1976 Christmas holiday period resulted in savings of 80,000 kilowatt hours per day.

With all but a limited number of essential employees on annual leave and most electrical and heating/air conditioning systems turned off during the four-day Thanksgiving weekend, the Center saved 765,000 kilowatt hours of electricity and 6,500 gallons of fuel oil. Dollar savings totaled about \$25,000.

An emergency crew at the KSC dispensary and required security and fire protection personnel will be on duty during the holiday period, and some construction contractor personnel will be at work during the December 27-30 period.

NASA Tours will also be in operation every day except Christmas Day, with large holiday crowds anticipated throughout the period.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
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December 29, 1977

RELEASE NO: KSC 217-77

THUNDERSTORM RESEARCH TO CONTINUE IN 1978

KENNEDY SPACE CENTER, Fla.--Study of the electrical properties of thunderstorms, conducted at the Kennedy Space Center during the past two summers, will continue in 1978.

The study, known as the Thunderstorm Research International Program (TRIP), involves combined study efforts of the top atmospheric physicists and lightning researchers in the United States, plus investigators from Europe and Africa, in studies of the electrical characteristics of thunderstorms--how they come into being in the first place and what happens after.

An invitation for the researchers to return to KSC in 1978 was extended at the recent annual Fall Meeting of the American Geophysical Union in San Francisco.

This is the third consecutive year that KSC will host the program, where researchers utilize the Center's unique meteorological facilities built up during the Apollo and Skylab programs, and the large number of summer thunderstorms that occur in the area.

The researchers fund their own programs and KSC provides its meteorological instrumentation, facilities of the local National Weather Service office and normally available support services such as power, communications and film processing.

Having many investigators in the same area studying the same storms and exchanging data offers the chance of gaining more knowledge than might come from isolated studies. The last two years of the program have borne out this concept.

The Spaceport is also benefitting from the program as much of what is being learned will be applied in future Space Shuttle launch and landing operations.

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Page 2
KSC 217-77

Although KSC is not scheduled to host the research group after 1978, the program will not end. TRIP's 1979 study site will be the Langmuir Laboratories, Socorro, N.M., for emphasis on mountain storms of the southwest.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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A. H. Lavender
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RELEASE NO: KSC 3-78

CONTRACT AWARDED TO HONEYWELL INFORMATION SYSTEMS, INC.

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for delivery of a Central Data Subsystem for Space Shuttle launch processing to the Federal Systems Division of Honeywell Information Systems, 7900 Westpark Drive, McLean, Va.

The Central Data Subsystem is one of two major elements of the Space Shuttle Launch Processing System developed by KSC for automated checkout of main Shuttle components from their arrival at the Spaceport until launch, and then from Orbiter landing to subsequent Shuttle launch. The Launch Processing System will also be involved in automated checkout of Space Shuttle ground systems.

The basic contract for the subsystem is for \$3,544,832. With the exercise of various contract options in the amount of \$11,160,595, total contract value can reach \$14,705,427. In addition to delivery of the subsystem, the contract provides for associated computer programs, documentation, installation and maintenance.

KSC is procuring the Central Data Subsystem for the Air Force. Installation will be at Vandenberg Air Force Base in California where a second Space Shuttle launch and processing facility will be developed.

The Central Data Subsystem consists of two large-scale computers that share a common memory. The memory stores test procedures, a master program library, pre- and post-test data analyses, and other types of data. Shuttle checkout, countdown and launch will be conducted with the support of information stored in the computers.

The other major element of the Launch Processing System is the Checkout, Control and Monitor Subsystem that performs the command monitor functions involved in test, checkout and launch operations.

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Page 2
KSC 3-78

The contract will involve work at Honeywell's Dear Valley Park installation in Phoenix, Ariz., and Vandenberg AFB under technical supervision of KSC and Air Force engineers.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Karl Kristofferson
305-867-2468

January 24, 1978

RELEASE NO: KSC 9-78

FIRST U. S. SATELLITE LAUNCHED 20 YEARS AGO

KENNEDY SPACE CENTER, Fla.--It seems only yesterday, yet two decades have passed since a 70-foot-tall, modified Jupiter C rocket called Juno I roared skyward from Complex 26 on Cape Canaveral, Florida to thrust an 18-pound, pencil-shaped satellite named Explorer I into orbit and America into the age of space.

The time was 10:48 p.m., EST, January 31, 1958. Progress since that eventful moment has been swift and dramatic.

We make telephone calls and relay TV broadcasts across oceans and continents, monitor the weather, survey croplands, prospect from orbit and explore the universe -- all by satellite.

We have watched Americans cavort on the lunar surface, gazed upon the barren faces of Mercury and Venus; viewed the indescribable beauty of a Martian sunset, peered into the seething caldrons of Jupiter and thrilled to the mind-boggling journeys of robot space-ships challenging the outer limits of the solar system and the infinity that lies beyond.

These stirring achievements have had a profound effect on all facets of American life -- our science, our economics, our politics, our education and our concept of ourselves in the universal scheme of things.

Explorer I, launched as the U. S. contribution to the International Geophysical Year scientific research program, opened outer space to the Free World. But unlike its Soviet predecessors, Sputniks 1 and 2, which were heavy on "showmanship" and light on science, Explorer I went right to work, its radio signals announcing the most significant discovery of the IGY -- the planet-girdling Van Allen radiation belt.

-more-

The tiny moonlet also confirmed man's ability to control temperature within an artificial satellite and demonstrated that micrometeorites posed no serious hazard to orbiting vehicles.

Several months after launch, battery depletion silenced Explorer I's voice. Though mute, the trail-blazing spacecraft still proved invaluable for visual and photographic observations used to compute and predict more precise orbital data for other satellites and provided important information on the earth's equatorial bulge and variations in its gravity.

On March 31, 1970, almost a year after American astronauts first stepped on the surface of the moon, Explorer I was consumed by a fiery reentry into the earth's atmosphere.

The Explorer I project was a joint effort of the Army Ballistic Missile Agency (ABMA) in Huntsville, Alabama and the Jet Propulsion Laboratory (JPL) in Pasadena, California, the latter a government-owned research and development center operated by the California Institute of Technology.

Heading the ABMA development team was the late Dr. Wernher von Braun who was later to develop the mighty Saturn V rocket that carried American spacemen to the moon.

Explorer I launch operations at the Cape were conducted by the ABMA's Missile Firing Laboratory, headed by Dr. Kurt H. Debus. Eighty-four members of this historic launch team, which formed the nucleus of the Kennedy Space Center following the inception of NASA in 1958, are still employed at the Center, preparing for the Space Shuttle era which will begin this October with the arrival of the Space Shuttle Orbiter 102.

The Explorer I launch vehicle, a modified Jupiter C rocket known as the Juno I, was developed by Von Braun's ABMA team. The high-speed upper stages were assembled by JPL. The California team also prepared some of the satellite instrumentation, packaged the satellite and was responsible for gathering the scientific data sent back to earth by the satellite's radio transmitter.

Dr. James A. Van Allen of the State University of Iowa furnished instrumentation aboard Explorer I to collect cosmic ray measurements. It was these instruments that detected the earth's radiation belt which now bears Dr. Van Allen's name.

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The Explorer I launch originally was scheduled for the morning of January 29, but weather observations indicated a maximum jet stream velocity out of the west at 170 mph at altitudes between 36,000 and 40,000 feet. Engineers predicted only a marginal chance for success under these conditions since winds of this velocity could kick the rocket off course or cause it to tumble and explode.

Surface weather was also unfavorable, with thunderstorms forecast at time of launch. It was feared lightning might detonate sensitive igniters in the vehicle upper stages. The launch was postponed 24 hours.

The next day was even worse. Jet stream winds of 205 mph forced a second postponement. On January 31, however, jet stream velocity dropped unexpectedly to 158 mph at an altitude of 8 miles. Surface weather was forecast as good. The launch was on.

At 10:48 p.m., seconds after a sharp firing command rang out in Cape Blockhouse 26, the 70-foot giant thundered to life, propelled by 83,000 pounds of thrust. Approximately 95 minutes later, JPL tracking stations in California acquired radio signals from the spacecraft, confirming preliminary indications that America's first satellite was in orbit.

Following the successful orbiting of Explorer I, President Dwight Eisenhower made this statement to the world: "This launching is part of our country's participation in the International Geophysical Year. All information received from this satellite promptly will be made available to the scientific community of the world."

Wernher von Braun was more prophetic. "This is the beginning in the long-range program to conquer outer space," he predicted. "Satellites have many uses of great value in scientific, military and communications fields."

"We will move onward to more challenging missions as fast as our resources permit."

Twenty years later, scientific, weather, communications and earth resources satellites ring the earth. Planetary spacecraft -- Mariners, Pioneers, Vikings and Voyagers -- have explored the solar system outward to Jupiter, with Saturn and Uranus encounters set for the 1979-86 time period. Man himself has taken the first steps toward the stars in Apollo and Skylab. Ahead lies the Space Shuttle, the world's first reusable manned spaceship, which will exploit the riches of space for the benefit of all and set the stage for eventual human colonization of the solar system.

Page 4
KSC 9-78

For Americans and the Free World, the quest began on a cool, January evening in 1958.

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305-867-2468

January 27, 1978

RELEASE NO: KSC 10-78

SPACE CENTER DRIVE-THROUGH TOURS RESUMED

KENNEDY SPACE CENTER, Fla.--Sunday drive-through tours of NASA's John F. Kennedy Space Center and adjacent Cape Canaveral Air Force Station are being resumed on Sunday, January 29.

Visitors may gain access to the NASA reservation via the NASA Causeway off U. S. Route 1 two miles south of Titusville or Florida Route 3 on Merritt Island.

Following "trailblazer" signs and aided by a map provided at the entrance gates, visitors may tour portions of KSC in their private automobiles and travel via NASA Parkway East to Cape Canaveral Air Force Station with its many historical sites and Space Museum.

The drive-through tours do not include access to Complex 39, site of the Apollo/Skylab launches and soon to be the prime location for Space Shuttle lift-offs and landings, or the KSC Industrial Area.

Safety constraints prohibit access to KSC's operational areas by private vehicle but guided bus tours are available at the Visitors Center with its many free exhibits, movies and space science demonstrations. A nominal fee is charged for the guided bus tours.

Drive-through visitors may leave the NASA/Air Force reservations via highways leading to the Florida mainland south of Titusville, Merritt Island or the beach area in the vicinity of Cape Canaveral and Cocoa Beach.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

A. H. Lavender
305 867-2468

Immediate

RELEASE NO: KSC 21-78

RECORD NUMBERS TOURED SPACE CENTER IN JANUARY-FEBRUARY

KENNEDY SPACE CENTER, Fla.--A record 120,485 patrons purchased NASA Tours tickets for visits to the Kennedy Space Center or adjacent Cape Canaveral Air Force Station in February.

February patronage exceeded the 99,454 who toured in February, 1977, by 21,031, and the previous record 99,957 in 1972 by 20,528. The increase over February, 1977, was 21 percent.

The 1978 two-month total of 200,087 exceeded that of January-February, 1977, by 31,198 and the previous high total of January-February, 1972, by 30,803. January-February, 1977, tour patronage was 169,889, and that of the first two months of 1972--the record year for NASA Tours--was 169,284.

Record NASA Tours patronage in January and February continued a trend recently reported by the Florida Department of Commerce showing NASA Tours to be the fourth most popular destination of tourists entering Florida in the last half of 1977.

Tours originate at the Kennedy Visitors Center, located on the NASA Parkway about six miles east of U. S. 1 south of Titusville, Fla. Motorists may reach the Visitors Center via Florida Road 405 from U. S. 1 or Florida Road 3 from Merritt Island. Tour buses are dispatched regularly throughout every day.

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Mailed:
March 2, 1978

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

Immediate

RELEASE NO: KSC 22-78

REMOTE "HANDS" MAY SOON CONTROL SPACEPORT DRAWBRIDGES

KENNEDY SPACE CENTER, Fla.--Two draw bridges spanning the main channel of the Intracoastal Waterway and linking the Kennedy Space Center with the Florida mainland may soon be operated by remote control as the result of an experiment now underway.

An experimental remote control system is being tested on the twin-leaf, 170-foot long bridge spanning Haulover Canal, the scenic, tree-lined waterway linking the northern Indian River with Mosquito Lagoon.

"What we're testing is a prototype for a permanent system at Haulover Canal and the dual bridge span across the Indian River on the NASA Causeway, or Florida Route 405," said William J. Paton, project engineer.

Paton said the purpose of the experimental system is "to demonstrate the feasibility and cost effectiveness of remote bridge operations.

"It makes maximum use of existing equipment," said Paton. "For example, some of the television cameras date back to Project Apollo."

If made operational, the system has the potential of saving approximately \$200,000 per year and paying for itself in four years. The project was inspired by a similar bridge automation experiment being conducted by the State of Florida.

How does the system work?

-more-

Mailed:
March 3, 1978

A duty officer in the Launch Control Center more than 12 miles southeast of the Haulover Canal bridge has electronic eyes and ears to put him "on location" and a control panel which he can use to open and close the bridge.

His "eyes" are two television cameras looking east and west along the waterway from beneath the bridge and two more located on the bridge control tower. The latter two cameras look north and south along Florida Route 3 and its approaches to the bridge.

His "voice" and "ears" are the loud speakers and microphones mounted on the bridge fenders near the water and on the bridge tower near the road level.

A remote control panel in the Launch Control Center interfacing with the master control panel at the bridge permits the duty officer to monitor and talk with canal and road traffic, open and close the barrier gates and bridge leaves, and operate warning lights.

Television signals are transmitted from a small microwave "dish" atop the bridge control tower to a receiver on top of the 525-foot-tall Vehicle Assembly Building. The audio signals travel by telephone wires.

The Launch Control Center bridge control panel incorporates all the functions on the panel at the bridge, which can be controlled from either location.

Paton noted that the "audio and remote control systems have worked very well. As anticipated, we've had some problems with the video - those TV cameras just weren't built for this application."

The TV cameras must be capable of looking directly at the sun without damage, handling the glare of headlights against the darkness of night and be capable of sight under extremely low light levels.

New TV cameras of advanced design capable of working under the varying light conditions required for the bridge operation have been provided by several manufacturers for testing.

The TV monitor in the Launch Control Center provides the duty officer with a split-screen, four-directional view and can be switched to a full screen picture of any of the four views for a close-up inspection. The cameras beneath the bridge can be moved to follow boat movements. Those watching the road from the bridge tower are fixed.

There is a wide seasonal variation in the number of boats with masts sufficiently tall to require the opening of the Haulover Canal bridge, which has a water clearance of 27 feet. In winter and summer, traffic is light with an average of four boats a day going through. During the north-south migrations of spring and fall, the boats requiring bridge openings average 15 a day.

According to Paton, recommendations will be made in April on the equipment needed for a permanent installation. "We plan to use as much of the experimental system hardware as possible to keep costs down," said Paton.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

March 16, 1978

Dick Young
305 867-2468

RELEASE NO: KSC 27-78

WACKENHUT AWARDED SPACEPORT SECURITY CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for protective services to Wackenhut Services Inc., Coral Gables, Fla.

The cost-plus-award-fee contract is for \$4,726,739 and covers the period from April 1, 1978, to March 31, 1979. It includes a fixed price option for a second year and unpriced options for three additional years.

The contract is for protective services consisting of security, law enforcement, fire prevention, fire fighting and related services.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle which is to begin manned orbital flights from here in 1979.

In addition, KSC launches a large variety of unmanned communications, weather and scientific satellites and spacecraft from facilities at Cape Canaveral Air Force Station and Vandenberg AFB, California.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867 2468

For Release:

Mark Hess
305 867-2468

March 28, 1978

RELEASE NO: KSC 32-78

SATELLITE DATA TO HELP WRITE STATE'S WATER MANAGEMENT PLAN

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract to the University of Florida to study the development of a water management system using satellite data and other NASA-developed technology.

The fixed-price contract is for \$99,013 and covers a one-year period which began March 3. Participating in the project with the University of Florida's Institute of Food and Agricultural Sciences are Florida's five water management districts and personnel from KSC's applications office.

The study could result in a Florida Water Resources Management Information System, a computerized bank of information that managers can draw from to aid their decisions on meeting growing water demands. The system, containing data compiled from earth resources satellites like NASA's Landsat, and the National Oceanic and Atmospheric Administration's GOES satellite, would take out much of the guesswork still involved in the water management process.

Florida's need for a comprehensive water management system was substantiated by results of studies conducted by the University of Florida and the South Florida Water Management District.

The University study showed a lack of water as the foremost problem facing agriculture in Florida, while the South Florida District reported that water demand in that area would equal the existing supply by about 1980.

These studies, coupled with a 1972 mandate by the Florida Legislature calling for the formation of a water use and supply development plan, prompted the Florida Water Management Districts to seek the University's resources and the Spaceport's technology to help them solve their complex problems.

The Kennedy Space Center is NASA's prime launch and recovery site for the Space Shuttle, scheduled for its first manned orbital flight from here in 1979.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

A. H. Lavender
305 867-2468

April 10, 1978

RELEASE NO: KSC 37-78

SPACEPORT AWARDS SOLID BOOSTER RETRIEVAL SYSTEM CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for production of recovery systems for expended Space Shuttle solid rocket booster (SRB) casings to the International Hydrodynamics Co., Ltd., 145 Riverside Drive, Vancouver, British Columbia.

The \$1,022,315.12 contract, awarded through the Canadian Commercial Corp., Ottawa, Ontario, provides for fabrication, testing and delivery of the recovery systems, called solid rocket booster nozzle plugs, and includes associated equipment and hardware. International Hydrodynamics is a small business firm.

Reuseable Orbiters and solid rocket booster casings are primary factors in the reduced cost of space flight that will be achieved by the Space Shuttle.

The Space Shuttle's two SRBs, burning with the Orbiter's three main engines, will produce the thrust to place the Orbiter in earth orbit. Following burnout, about two minutes after launch, the expended SRBs will be jettisoned and parachute into the Atlantic Ocean about 146 nautical miles down range from the Kennedy Space Center launch site.

Two retrieval ships, each carrying a nozzle plug, will be stationed in the Atlantic Ocean near the landing area.

Each of the ships will recover a SRB casing, and the parachute and the frustrum-drogue chute combination used in returning SRB's to the earth's surface.

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A nozzle plug is essentially a long motorized cylindrical metal cork. Operated remotely through an umbilical cord connecting the nozzle plug with pneumatic and control equipment on the ship, the plug swims into the tail section of a 129-foot long casing, secures itself in position and pumps air into the cavity.

This raises the casing partially out of the water, causing it to tip from vertical to the horizontal position necessary for towing it back to land.

Sizeable savings will be achieved through recovery of the SRB casings. With a scheduled lifetime of 19 reuses of a casing, the saving to be obtained through reuse of the casing, including the cost of retrieval and refurbishment, will be \$47 million.

Parachutes will be reeled onto a large spool on the ship and the frustrum will be lifted onto the deck by a ship's crane.

The Florida Spaceport will be the first Space Shuttle launch site and the primary landing site for the Orbiter.

The first Space Shuttle launch is scheduled in mid-1979.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Mark Hess
305 867-2468

April 3, 1978

RELEASE NO: KSC 38-78

APRIL 5 LAUNCH OF SATURN IB SETS JAPAN, NOT SPACE, AS DESTINATION

KENNEDY SPACE CENTER, Fla.--A Saturn IB rocket, the twin of the launch vehicle which carried Skylab and Apollo Soyuz Test Project (ASTP) astronauts into space, will be launched from the Kennedy Space Center on April 5.

Only this time, the powerful 650-ton rocket will begin its journey on a barge and its destination will be Japan, and not space.

The Saturn IB is being shipped from KSC to Tokyo, Japan, as part of the largest foreign display of United States space hardware ever held. It is just a sample of the hundreds of space artifacts being borrowed from various NASA Centers across the country for display at the Space Science Exposition in Tokyo.

The exposition will begin July 16, on the 9th anniversary of the launch of Apollo 11, man's first lunar landing, and will run through January 15, 1979. Estimated cost of the exposition is \$21 million.

The Space Science Exposition is being organized by the Association for the Space Science Exposition, (ASSE) an umbrella organization composed of the Japan Science Society and the Japanese Maritime Science Promotion Foundation. ASSE will pay all dismantling, loading, round-trip shipping, reloading and reinstallation costs of the artifacts.

As part of the total loan package with KSC, the ASSE will cover all expenses of transporting the Saturn IB from the Visitors Information Center, (VIC) where it has been on display, to Japan. They will also pay all costs to erect the 224-foot tall rocket in a vertical position at the VIC upon its return to the Spaceport.

Among other space artifacts to be shown at the exposition are: full-scale Mercury-Redstone, Mercury-Atlas, and Gemini-Titan rockets; a lunar rover; flown Mercury, Gemini and Apollo spacecraft; a detailed mock-up of the Viking lander; and an ATS-6, (Applications Technology Satellite) communications satellite.

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Loan of the space artifacts is being coordinated by the Smithsonian Institution, National Air and Space Museum in Washington, D. C.

The 80-foot, 84,100 pound first stage of the Saturn IB was removed from the VIC on March 24 and loaded onto a KSC barge. The second stage standing 58-feet tall and weighing 23,000 pounds, and the spacecraft --- consisting of a command and service module, a launch escape system and a spacecraft lunar module adapter -- were loaded on March 30.

The barge will leave KSC on April 5 and is to arrive in Savannah, Georgia, on the 8th. There, the hardware will be transferred to a Japanese container cargo ship for the remaining three week voyage to Tokyo.

A Saturn IB rocket is capable of placing a 40,000 pound payload into low earth orbit. Its first stage is powered by eight engines that produce over 1.6 million pounds of thrust at liftoff. When fueled, the vehicle weighs 1.3 million pounds, or 153,000 pounds empty.

The last launch of a Saturn IB, for ASTP, occurred July 15, 1973. It carried astronauts Thomas Stafford, Vance Brand and Donald Slayton to a historic rendezvous and docking with a Soviet Soyuz spacecraft in Earth orbit.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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For Release:

Mark Hess
305 867-2468

April 14, 1978

RELEASE NO: KSC 41-78

ALASKAN STUDENTS TOUR SPACEPORT AS PART OF NATIONWIDE EXCURSION

KENNEDY SPACE CENTER, Fla.--As the last leg in a month-long excursion through the United States, 10 students from the Chuathbaluk High School, and the Alaskan village of the same name, recently visited the Central Florida area and toured the Kennedy Space Center.

Chuathbaluk is a small native Alaskan village located about 450 miles west of Anchorage. It has only 100 residents and the high school's entire student body consists of 14 ninth and tenth graders. Four of the students did not make the trip -- two were in a work study program in Anchorage and the others were busy beaver trapping.

Robert and Joan Brown, a husband-wife teaching team and the only instructors at the high school, planned the extensive nine-city field trip as a study tour for which the students will receive class credit. In addition to their tour of the Space Center -- which counts for science credit -- the students visited Seattle, New York, Philadelphia, Washington, D. C. and four other cities.

The high school raised \$11,000 in seven months to help pay for the trip. Local townspeople, as well as the 300 residents of Aniak 10 miles down the river from Chuathbaluk, patronized the dances, bingo games and movies sponsored by the high school. A matching federal grant provided the high school with the remaining money.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Mark Hess
305 867-2468

April 25, 1978

RELEASE NO: KSC 44-78

SPACEPORT MARKS SMALL BUSINESS WEEK APRIL 30 - MAY 6

KENNEDY SPACE CENTER, Fla.--During the week of April 30 - May 6, the John F. Kennedy Space Center will join with other NASA centers and government agencies for Small Business Week, honoring the country's more than 13 million small businesses.

Supporting small businesses is something KSC takes seriously all year. During fiscal year 1977, KSC issued nearly \$40 million in contracts to small business firms. Jack Dryer, industry advisor and small business specialist from KSC's Procurement Office, reports that \$14 million of that went to small Florida-based firms, with many of the contracts granted to local businesses.

At the midway point in fiscal 1978, KSC has awarded \$17 million to small business firms.

Small businesses account for 13 million of the 14 million businesses in the United States today, including some three million farms. Employment for over half the labor force and more than 48 percent of the gross business product is provided by small business firms.

Small businesses at KSC currently operate the technical and research library, provide janitorial services, furnish printing and reproduction services, handle the mail and distribution duties, and run the Center's calibration laboratory, component refurbishment facilities and key punch service. All construction contracts under \$1 million are restricted to small business firms.

Several years ago KSC initiated a new provision in construction contracts, totaling more than \$500,000, requiring the prime contractor to sub-contract at least 20 percent of his total subcontracted work to minority-owned firms. Since that time similar provisions have been adopted by other government agencies across the country.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
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For Release:

A. H. Lavender
305 867-2468

April 25, 1978

RELEASE NO: KSC 45-78

NOTICE TO EDITORS/NEWS DIRECTORS

LAUNCH OF ORBITAL TEST SATELLITE SCHEDULED MAY 4

KENNEDY SPACE CENTER, Fla.--The launch of an Orbital Test Satellite (OTS) from Complex 17, Cape Canaveral Air Force Station, is scheduled May 4. Liftoff on a Delta rocket will be during a launch opportunity extending from 6:57 to 7:40 p.m. Eastern Daylight Time.

NASA's Kennedy Space Center will launch the experimental communications satellite for the European Space Agency.

A prelaunch news conference on the OTS launch and mission is scheduled in the E & O Building Conference Room, Cape Canaveral AFS at 11 a.m. on May 3. Newspeople with KSC picture badges may proceed directly to the E & O Building via Cape Gate 1, KSC Gate 2 or KSC Gate 3. Others should reach the KSC Public Information Office in the KSC Headquarters Building prior to 10:30 a.m. Transportation to the E & O Building for the conference will be provided.

For launch coverage, newspeople with KSC picture badges may proceed directly to Press Site 1. Others will be badged in the lobby of Frank Wolfe's Beachside Motel, Cocoa Beach, and will travel to the press site in convoy, departing the motel at 5:30 p.m.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:
May 11, 1978

Dick Young
305 867-2468

RELEASE NO: KSC 47-78

SUN TO HEAT WATER FOR SPACEPORT CAFETERIA

"That lucky old Sun,
Got nothin' to do,
But roll aroun' Heaven all day."

Popular Song

KENNEDY SPACE CENTER, Fla.--"That lucky old Sun" may loaf elsewhere on its daily rounds but it has plenty of work to do as it rolls around over the Kennedy Space Center.

Solar energy is already being used to heat water for the KSC Visitors Center cafeteria and it will soon be put to work providing hot water for the cafeteria in the Headquarters Building.

A contract for \$67,555 was awarded to Citrus Mechanical Inc., Inverness, Fla., on May 1 and the new solar-heated water system should be completed within four months.

The contract calls for installation of solar heat collectors, heat exchangers and a control system.

The solar array will consist of 960 square feet of collectors installed on the south side of the Headquarters Building in the center's Industrial Area. The arrays will be installed near ground level and consist of three rows of 16 collector units, each measuring 3 by 7 feet.

The arrays will face due south and be tilted 28 degrees from the horizontal to take maximum advantage of the angle of the Sun's rays at KSC's latitude.

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According to Wallace H. Boggs, KSC's Energy Projects Coordinator, the system will provide approximately two-thirds of the 120 degree (F.) water used in the cafeteria.

The water is now heated by heat exchangers from the high temperature water circulated from the Central Heating Plant, which is fueled by oil.

The new system will not loaf on weekends.

On non-working days, water will be heated and be stored in a 1,500-gallon tank. When needed, it will automatically be mixed with cooler water and supplied to the cafeteria at the required 120 degrees. Depending upon a number of variable factors, the system is capable of heating water to a maximum temperature of 195 degrees.

Boggs said the solar heating system will pay for itself within 10 years.

The new system is part of a comprehensive plan to make the center less reliant on non-renewable, fossil energy sources.

On the drawing boards now are plans to heat and air-condition the Hall of History at the Visitors Center with a solar energy system. Also being planned is the heating of water for the center's photographic laboratories by a combination of solar energy and reject heat from the Headquarters Building air conditioning system.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

May 12, 1978

Karl Kristofferson
305 867-2468

RELEASE NO: KSC 48-78

KSC SLEUTHS SOLVE CASE OF EXPLODING ROCKET

KENNEDY SPACE CENTER, Fla.--When Bob Denaburg of KSC's Malfunction Investigation Staff first saw the bits and pieces of Delta 134 spread out on the floor of Hanger AF on the Cape, he knew how the "king's men" must've felt when they were given the job of trying to put Humpty Dumpty together again.

But Denaburg and his colleagues had a much more difficult task than the royal entourage of the well-known nursery rhyme. They weren't dealing with eggshells, but the recovered remnants of America's workhorse Delta rocket.

And somewhere among all that shattered and twisted debris were clues that might reveal why Delta 134 and the European Space Agency's Orbital Test Satellite took a \$42 million plunge into the Atlantic shortly after liftoff last September 13.

"It was obvious from the start that we had our work cut out," said Denaburg, a metallurgical engineer. "After the Delta pieces were reassembled jigsaw-puzzle style, we were asked to join in the search for telltale signs...critical samples...that would lead us somewhere, hopefully to a solution."

The Malfunction Investigation Staff, headed by Drew Evans, is KSC's counterpart to TV's fictional gumshoes, Columbo, Kojak, and Barnaby Jones. "There's really not a whole lot of difference between us and them," Evans jested. "They deal with people and we deal with hardware. But the process is the same."

Evans' band of supersleuths works out of offices and labs located in KSC's Operations and Checkout Building. At their disposal is approximately \$2 million worth of sophisticated test and analysis equipment which allows them to probe into the causes of just about any kind of material or component failure.

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The staff's major areas of concern are metallurgical, electronic, mechanical and fluids, with chemical analysis support provided by KSC's Microchemical Analysis Lab, directed by Jim Jones, and the Materials Testing Lab, headed by Carlos Springfield.

Normally, Evans' group is involved in direct investigations; that is, they function as technical directors and their conclusions are final. This was not the case with Delta 134. "We were not the final authority on this one," emphasized Evans. "That rested with the Delta 134 Failure Review Board.

"But we were a major contributor of investigative support to the Board. We were here, close to the problem, with appropriate personnel and equipment capabilities."

Even so, the Delta 134 case taxed the staff's expertise and resources, gobbling up over 300 manhours of effort and patience. The first clue was found on the battered remains of solid rocket number 1, one of the nine Castor IV strap-on solid motors used to impart added boost to the Delta.

Solid number 1 was of special interest to Bob Denaburg and the rest of the team because photographs taken during the launch phase had revealed a massive plume of fire emanating from the solid. Seconds after the plume appeared, a gigantic explosion ripped the Delta to shreds. Had solid number 1 ruptured, causing the explosion, or was the explosion the result of a failure of some kind within the Delta's liquid-fueled booster stage?

A check of solid number 1, fortunately, one of the eight solids recovered by salvage teams, revealed that it indeed had ruptured. Furthermore, a number of hot spots, or heat affected areas, were found on the metal casing of the solid's aft section. "These hot spots were not normal," said Denaburg, "and indicated an uneven propellant burning problem or a liner failure."

Metallurgical examinations showed a hardness difference between the metal of the hot spot areas and the surrounding casing, indicating that the casing overall may not have met material specifications. "This led us to believe that a heat treatment problem existed at the time the casing was fabricated." Denaburg added.

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Additional metallurgical and mechanical properties tests of solid number 1 and the other seven recovered solids were conducted by the staff and their counterparts at other NASA centers and contractor organizations. It was confirmed by all testing groups that a generic heat treatment problem and some minor welding problems were inherent in the fabrication process. Corrective actions were immediately initiated in the manufacturing procedures.

There was still a "fly in the ointment," Denaburg pointed out. The tests also confirmed that the casings, though not up to standard specifications, were materially sound enough to withstand the internal pressures generated by the burning solid propellant. "In other words, it was highly unlikely that the casings would rupture internally under normal burning conditions," he explained.

New evidence uncovered by the Microchemical Analysis Lab shifted the search from the aft section of number 1 to the forward section where the propellant grain was housed. The evidence was in the form of metallic nodules found imbedded in the insulation material of solid number 4, which was mounted on the booster adjacent to number 1. The position of the nodules on number 4, sprayed out like buckshot, coincided with the section of number 1 where the second propellant pour interfaced with the first. Moreover, the imbedded nodules were of the same metallic composition as the casing alloy of number 1.

Denaburg explained that the propellant for the Castor IV solids used on Delta 134 is poured like a thick pudding in three separate stages. On hardening, the propellant interfaces merge together into a homogeneous unit. "If they don't," said Denaburg, "a hairline crack might form at the interface. During burn, the crack can become a miniature combustion chamber. Pressure would build quickly and the casing could rupture at that point.

"It appeared from the investigation that the possibility of a propellant anomaly existed on solid number 1 which probably caused a burn-through of the casing, exposing the Delta booster to extreme heat and igniting its liquid fuel."

The Review Board, after studying the technical evidence submitted by all NASA and contractor investigative groups, reached virtually the same conclusion. A final report issued by the Board stated that the cause of the failure was most likely the result of a propellant defect in solid number 1,

due either to incomplete mixing and curing of propellant ingredients or introduction of a contaminant, probably water.

As a result of the Board's findings, the design of the Castor IV solid rocket motor has been changed. Additional insulation has been placed between the propellant and motor case as extra protection against such defects. Also, procedures for mixing and curing the propellants have been revised, and contractor and government test, inspection and manufacturing surveillance have been improved.

New Castor IV motors incorporating these corrective actions were used for the successful launch of Delta 141 on May 11. Ironically, the payload was OTS-2, a replacement for the European Space Agency satellite lost aboard Delta 134.

The loop had been closed, largely due to the efforts of KSC's master sleuths.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Al Lavender
305-867-2468

June 2, 1978

RELEASE NO: KSC 53-78

SPACEPORT EXTENDS DESIGN ENGINEERING CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$23,626,661 contract extension for engineering support services to Planning Research Corporation, McLean, Va.

The 12-month cost-plus-fixed-fee contract extension provides for Planning Research Corporation to continue design engineering services for Space Shuttle equipment and other engineering activities for which KSC's Design Engineering Directorate is responsible, from May 20, 1978 through May 19, 1979.

Services provided by the contractor include the design of new and modified ground support equipment and minor facilities design support for all Center programs. Included among the company's employees are engineers, draftsmen, technical writers and computer programmers.

Support is provided at the Spaceport and Cape Canaveral AFS in Florida, and at Vandenberg AFB and NASA's Dryden Flight Research Center in California.

The extension brings the total amount of the contract since the original award in May, 1974, to \$97,306,220.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

Mark Hess
305 867-2468

For Release:
June 13, 1978

RELEASE NO: KSC 58-78

MANAGEMENT SERVICES, INC. CONTRACT FOR LABORATORY OPERATION EXTENDED

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$1,774,404 contract extension to Mangement Services, Inc. The Huntsville, Alabama, firm operates the Spaceport's component refurbishment and chemical analysis laboratories.

The one-year extension covers the period from June 1, 1978 through May 31, 1979. The cost-plus-award-fee contract is set-aside for small businesses.

The \$1,774,404 extension brings the total value of the original contract to \$4,536,339. The basic contract, awarded in 1976, called for a total of three years with annual renewels of performance and was negotiated competitively.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

Dick Young
305 867-2468

For Release:
July 5, 1978

RELEASE NO: KSC 63-78

BOEING AWARDED SPACE CENTER CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded Boeing Services International Inc., Seattle, Washington, a one-year, \$24,071,643 extension of its ground systems operations contract.

The contract covers the period July 1, 1978, to June 30, 1979. The renewal brings the cumulative value of the parent contract to \$67,143,012.

Services to be performed under the contract cover facility and utility operations and maintenance, including propellants; cranes, doors and platforms; elevators; services and shops; nondestructive evaluation; life support, and industrial operations.

The Kennedy Space Center is the prime launch and recovery site for the reusable Space Shuttle, scheduled to begin manned missions in Earth orbit during 1979.

The Kennedy Space Center also launches a wide variety of unmanned weather, communications and scientific satellites and spacecraft from facilities at Cape Canaveral Air Force Station and Vandenberg Air Force Base, California.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867 2468

Mark Hess
305 867-2468

For Release
July 13, 1978

RELEASE NO: KSC 66-78

KSC HOSTS THUNDERSTORM RESEARCH PROGRAM FOR THIRD CONSECUTIVE YEAR

KENNEDY SPACE CENTER, Fla.--For the third consecutive year, the Kennedy Space Center is hosting about 80 of the nation's leading atmospheric physicists and lightning researchers for a summer of combined study of the electrical properties of thunderstorms.

Known as the Thunderstorm Research International Program (TRIP) the study utilizes the Spaceport's unique meteorological facilities--built up during the Apollo and Skylab programs for assessing thunderstorm hazards during launch operations--and the high incidence of lightning-charged storms that occur in this area over the summer months.

Seventeen scientific investigators, representing many of the country's top educational institutions and research organizations--including ten universities, two research laboratories, the National Oceanic and Atmospheric Administration (NOAA) and three other NASA Centers in addition to KSC--are participating in the study.

The university researchers are funded by the Office of Naval Research and the National Science Foundation. KSC provides its meteorological instrumentation, facilities of the local National Weather Service office and normally available support services such as power, communications and film processing. Personnel from KSC's Technical Support (TS) Directorate assist the investigators in selecting and setting up their experiment sites. Angelo Taiani, of the TS Operations Support Management Office, is Project Coordinator of TRIP '78.

The TRIP study was first conducted at KSC in 1976, born out of the concept that much more knowledge about the phenomena that cause electrical charges in clouds can be brought out by having many investigators study the same storms in the same area.

By hosting the study, KSC also benefits as much of what is being learned will be applied in future Space Shuttle launch and landing operations.

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Many of the experiments use instruments brought to KSC by the participating investigators, including ground systems and instrumented aircraft.

The scientists will also employ many of KSC's instrumentation systems, including the field mill system, developed during the Apollo program for detection of buildup of electrical charges in overhead thunderclouds that might interfere with space vehicle launch operations; NASA-6, the Spaceport's instrumented aircraft used in previous lightning studies; and the Lightning Detection and Ranging (LDAR) system, which detects electrification in distant clouds. NOAA's Geosynchronous Operational Environmental Satellite will provide satellite photographs for scientific use.

Services of the NOAA National Weather Service office at KSC and the Air Force Weather Service office at Cape Canaveral Air Force Station will be available to the researchers. Daily forecasts and briefings will be given of the probability of electrically charged clouds causing lightning strokes in the KSC vicinity.

Among the more interesting experiments being conducted is the evaluation of prototype lightning sensors that will be part of the scientific package to be flown on the Jupiter Orbiter Probe in 1982.

The Jupiter Orbiter Probe, formally designated as Project Galileo, is to become the first planetary spacecraft to be carried aboard the Space Shuttle. Galileo will conduct the most scientific investigation yet of Jupiter, its environment and moons, including the first direct measurement of the planet's atmosphere.

An earth-based lightning detection system, developed by two TRIP principal investigators, who are co-investigators for Project Galileo, will be used to check the accuracy of the prototype version of the Jupiter-bound sensors.

Other experiments include the study of overall evolution of lightning activity, examining the structure of waveforms radiated from lightning for characteristics which are indicative of storm type--specifically, to determine whether or not tornado bearing storms can be identified on the basis of the radio frequency radiation associated with the storm system--obtaining range and azimuth data for lightning strokes using ground based systems, monitoring electric field and corona (surface discharge of electricity) current over water, and study of precipitation formation and development in thunderclouds as related to lightning occurrences.

Several researchers are using airborne instrumentation to gather data. NASA's C-45 aircraft, NASA-6, will be used to assist ground instrumentation in locating clouds and to determine and record electric field intensity in selected clouds. Using a T-39 aircraft as a testbed, the Ryan Stormscope Thunderstorm Avoidance System will be evaluated for in-flight effectiveness. To obtain cloud physics observations within and in the immediate vicinity of Florida thunderstorms, a World War II vintage T-28 will penetrate storms at 20,000 feet.

KSC will conduct two investigations of its own during TRIP '78. The first will be the operation of the LDAR system. The lightning detection and ranging device will be used to locate electrically active areas of a cloud and map the space-time history of electrical discharges, determine the physical relationship between electrically active areas and rain areas of a cloud, detect and locate lightning strikes to the ground, and gather evidence that VHF radiation ceases just prior to cloud-to-ground contact and resumes after the return stroke has been established.

Working with University of Florida personnel, KSC will also conduct an experiment using television cameras to locate the coordinates of all cloud-to-ground lightning flash ground-contact points. At the end of each storm day, video tapes of each storm will be analyzed and presented to the principal investigators with a list of lightning times-of-occurrence and ground-strike coordinates to aid with their data collection.

Organizations participating in the study and principal investigators are given below:

Air Force Flight Dynamics Lab, Wright-Patterson AFB - Lt. Robert Baum.

New Mexico Institute of Mining and Technology (NMIMT) - Dr. Marx Brook and Professor Charles B. Moore.

NOAA Environmental Research Laboratory - Dr. Heinz W. Kasemir.

University of Arizona - Dr. E. Phillip Krider.

NASA Goddard Space Flight Center - Dr. David M. LeVine.

University of Miami - Dr. Roger M. Lhermitte.

National Center for Atmospheric Research - Dr. Robert Serafin.

NASA Marshall Space Flight Center - P. Marrero.

Department of Transportation/Federal Aviation Administration - Dr. James Hallock.

State University of New York - Dr. Bernard Vonnegut and Dr. Richard E. Orville.

Naval Research Laboratory - Dr. Lothar Ruhnke.

South Dakota School of Mines and Technology - Dr. Paul Smith and A. Musil.

University of Florida - Dr. Martin A. Uman

NASA Langley Research Center - Klaus P. Zaepfel

University of Colorado - C. Hayenga

NASA Ames Research Center - A. Wilhelmi

NASA Kennedy Space Center - Carl Lennon

Although KSC is not scheduled to host the research group after 1978, the program will not end. TRIP's 1979 study site will be hosted by NMIMT at the Langmuir Laboratories, Socorro, New Mexico for emphasis on mountain storms of the southwest.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Mark Hess
305 867-2468

September 14, 1978

RELEASE NO: KSC 92-78

SPACEPORT TOURS UP NEARLY 20 PERCENT OVER 1977 TOTAL

KENNEDY SPACE CENTER, Fla.--For the eighth consecutive month, guided bus tour patronage at the Kennedy Space Center increased above the number of visitors recorded for the same month a year ago.

In keeping with a trend established earlier this year, figures for August show the nation's Spaceport attracted 156,164 visitors, a 10.8 percent increase above the 141,005 recorded for the same month in 1977.

Bus tour patrons also nudged over the one million mark for 1978 in August. Last year, the one millionth NASA tours ticket was not logged until November, and not since 1973, during the manned Skylab program, has this milestone been reached so early in the year.

The cumulative total for bus tour patronage during the first eight months of 1978 is 1,020,682, an increase of 19.9 percent over the same period of 1977.

As the Kennedy Space Center continues its preparations for the first manned orbital test flight of the Space Shuttle, scheduled for next year, visitors to the Spaceport have steadily increased.

Bus tours of the Spaceport are given daily from 8 a.m. until two hours before dark and are offered to the public for a nominal charge.

The tours are operated from the Kennedy Space Center's Visitors Center. Located on the NASA Causeway, the Visitors Center is accessible from U. S. 1, two miles south of Titusville, or Florida Route 3 from Merritt Island.

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Page 2
KSC 92-78

Two basic tours are offered. One takes in the manned space flight facilities at Launch Complex 39 which were originally built for the Apollo program, but have been reshaped for their role in the Space Shuttle.

The other tour covers NASA's launch facilities for unmanned communication, weather and scientific satellites and spacecraft, as well as historical launch sites where man first began his journeys into space.

In addition to the tours, many free attractions are offered at the Visitors Center and new Hall of History, including space movies, space science lectures and demonstrations, recovered manned spacecraft and full scale rockets.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Dick Young
305 867-2468

November 3, 1978

RELEASE NO: KSC 119-78

NOTICE TO EDITORS/NEWS DIRECTORS

HEAO-B/NATO-IIIC NEWS CONFERENCES SCHEDULED

KENNEDY SPACE CENTER, Fla.--News conferences on two upcoming launches will be held during a five-day period in mid-November.

High Energy Astronomy Observatory-B will be launched aboard an Atlas-Centaur rocket from Complex 36 on Monday, November 13, during a window extending from 12:24 to 2:12 a.m. EST.

The HEAO-B pre-launch news conference will be held in the Conference Room of the E&O Building at Cape Canaveral Air Force Station at 11 a.m. on Friday, November 10.

News media representatives who plan to attend should be at the Public Information Office, Room 1207 in the KSC Headquarters Building, by 10:30 a.m. on November 10.

Transportation to and from the news conference will be provided.

For launch coverage, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the motel to Press Site 1 will leave at 11 p.m. on Sunday, November 12, with a stop at the Cape Canaveral AFS Pass and Identification Building at 11:15 p.m.

NATO-IIIC, the third in a new series of communications satellites for the North Atlantic Treaty Organization, will be launched from Complex 17 aboard a Delta rocket on Wednesday, November 15, during a window extending from 7:58 to 8:18 p.m. EST.

The pre-launch news conference for the NATO mission will be held in the E&O Building at Cape Canaveral AFS at 11 a.m. on Tuesday, November 14.

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Members of the press who plan to attend should be at the KSC News Center in the Headquarters Building no later than 10:30 a.m. Transportation to and from the news conference will be provided.

On launch day, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the motel to Press Site 1 will leave at 6:30 p.m. with a stop at the Cape Canaveral AFS Pass and Identification Building at 6:45 p.m.

Only one mission remains on KSC's 1978 schedule after the launches of HEAO-B and NATO-IIIC. That is the Telesat-D mission, a Canadian domestic communications satellite, scheduled for placement in a synchronous orbit in mid-December by a Delta rocket.

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NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Darleen Hunt
305 867-2468

November 8, 1978

RELEASE NO: KSC 185-78

KSC HAS NEW PROCEDURE FOR CACHET SERVICE

KENNEDY SPACE CENTER, Fla.--A new cachet service for interested philatelists is being offered at NASA's John F. Kennedy Space Center. The service will be operated by the KSC Exchange Council, which is an employee service organization at the Center.

The following procedures will go into effect on December 1, 1978.

The event for which the cachet service is desired must be specified. Each cover must be stamped and self-addressed, and will be mailed to addressee from the Kennedy Space Center post office on the date of the event. The KSC post office is closed on Saturdays, Sundays, and Federal holidays. Cancellations for events which might occur at these times will be made on the morning of the next day the KSC post office is open for business. Quantity service will be available in lots of 100. Requests for this type of service must include sufficient funds to cover return postage of bulk packages and insurance if required. Hand-back service by the KSC post office will not be provided.

At this time, no special NASA cachet service (rubber stamp) will be provided. If customer sends stamped, unprinted cover or cover with his own preprinted cachet, price is 15 cents for each cover. (Prices may change if increasing overhead costs dictate.)

Envelope size should be 3-3/4" x 6-1/2". Covers should contain fillers not to exceed the thickness of a computer card.

Payment must be included with order and addressed to Philatelic Cover Service, NASA Exchange, P. O. Box 21207, Kennedy Space Center, Florida, 32815. Check or money order is advised. Stamps are not acceptable as payment. Orders must be received at KSC a minimum of one week prior to desired event to ensure sufficient time for handling.

All inquiries must be accompanied by a stamped self-addressed envelope.

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Requests for personally autographed covers, or for carrying of covers onboard during flight cannot be complied with.

The cachet service will be offered for launches and other notable events to be announced at later dates. For example, plans now call for providing this cachet service for the following notable events in the Space Shuttle Program:

- a. Arrival of first orbiter at the Kennedy Space Center
- b. Rollout for First Manned Orbital Flight
- c. First Manned Orbital Flight
- d. Each subsequent orbital flight test
- e. First operational flight, etc....

In addition to the above, cancellations will be made - as requested - for minor events and/or anniversaries of past space related events.

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Dick Young
305-867-2468

December 26, 1978

RELEASE NO: KSC 204-78

FIRST SPACE SHUTTLE, 7 UNMANNED MISSIONS TO BE LAUNCHED IN 1979

KENNEDY SPACE CENTER, Fla.--The United States will regain a manned presence in space in 1979 with the first launch of the Space Shuttle.

The first Space Shuttle mission will end a four-year hiatus in manned spaceflight which began with the conclusion of the Apollo-Soyuz Test Project in July, 1975.

Launch of the first Space Shuttle mission with a crew comprised of Astronauts John W. Young and Robert L. Crippen is tentatively scheduled for September 28, 1979. The mission will be approximately 54 hours in duration and end with a landing at Dryden Flight Research Center, Edwards, California.

The Kennedy Space Center will also launch 7 unmanned missions from its facilities at Cape Canaveral Air Force Station, Florida.

The unmanned launch schedule includes:

- - SCATHA, an Air Force corona physics research and development satellite, will be launched aboard a Delta rocket from Complex 17 no earlier than January 25. SCATHA is an acronym formed from Spacecraft Charging at High Altitudes. This will be KSC's first mission of 1979.

- - FLTSATCOM-B, second spacecraft in a new and highly versatile worldwide military communications system, will be launched aboard an Atlas Centaur from Complex 36. FLTSATCOM communications capabilities will be shared by the U. S. Navy, U. S. Air Force, other elements of the Department of the Defense, and will support the Presidential Command Network. Like most communications satellites, it will be placed in a stationary orbit 22,300 miles above the equator. Launch is scheduled for late spring.

- - WESTAR-C, third satellite in the Western Union domestic communications network, will be launched aboard a Delta rocket from Complex 17 in late summer. The satellite will be placed in a

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stationary orbit 22,300 miles above the equator.

- - High Energy Astronomy Satellite-C (HEAO-C) will be launched from Complex 36 on an Atlas Centaur in September. HEAO-C is designed to collect data on gamma and cosmic rays. This third observatory in the HEAO series will join HEAO-1, launched in 1977, and HEAO-2, launched in 1978, in making studies of high energy sources such as pulsars, quasars, neutron stars and black holes. High energy radiations such as x-rays and gamma rays are prevented from reaching the surface of the Earth by the atmosphere and must be studied from space. The three and a half ton HEAO-class spacecraft are the heaviest payloads launched by the Atlas Centaur rocket.

- - The SMM spacecraft (for Solar Maximum Mission) is scheduled for launch aboard a Delta rocket from Complex 17 in the autumn of 1979. The SMM spacecraft will be placed in orbit to study solar flares and other temporary events on the sun during the 1979-1981 peak of its 11-year cycle.

- - RCA-C, third in a series of domestic communications satellites owned and operated by RCA, will be launched aboard a Delta rocket from Complex 17 in late 1979. It will be placed in a stationary orbit 22,300 miles above the equator. The RCA system provides communications links between Hawaii, Alaska and the 48 contiguous states.

- - INTELSAT V (F-1), the first in a new series of communications satellites owned and operated by the International Telecommunications Organization, is scheduled for launch on an Atlas Centaur from Complex 36 in late 1979. This new, high-capacity satellite will join earlier generation spacecraft in providing global communications services in INTELSAT's 102-member nations. INTELSAT satellites of previous generations are now in service in stationary orbits 22,300 miles above the equator in the Atlantic, Pacific and Indian Oceans.

This launch schedule calls for 10 fewer unmanned missions than the 17 launched in 1978. It has far fewer unmanned launches than the 30 missions logged during the peak years of 1965 and 1966.

The reduced launch rate in 1979 doesn't mean that NASA is getting out of the space business - far from it. For 1979 marks the beginning of the transition from launching manned spacecraft and unmanned satellites and planetary probes with expendable rockets to a new era when they are carried into space aboard the reusable Space Shuttle.

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The Space Shuttle consists of a combination spacecraft and aircraft about the size of a DC-9 jet transport called the orbiter, an external tank carrying liquid hydrogen and liquid oxygen for the orbiter's three powerful rocket engines, and two solid rocket boosters. All of the major components with the exception of the large external tank are reusable.

The orbiter has a spacious payload bay measuring 60 feet long and 15 feet in diameter. It can carry up to five satellites into space simultaneously, retrieve malfunctioning spacecraft for repair back on earth, or undertake missions with Spacelab, a combination of a pressurized module in which scientists can work in shirtsleeve comfort and pallets on which instruments and experiments can be exposed to the space environment.

Spacelab is being developed by the European Space Agency at a cost of approximately \$500 million. It, too, is reusable.

The Kennedy Space Center's Apollo/Saturn facilities have been reshaped for their new role and the first elements of shuttle flight hardware are beginning to arrive.

The first orbiter to go into space is now undergoing construction at the Rockwell International plant in Palmdale, California, and will be delivered to KSC in March.

Dr. Walter J. Kapryan, KSC's Director of Space Vehicle Operations and his launch team, are looking forward to the arrival of flight elements with anticipation.

"Having the hardware in our hands will be a great motivator," said Kapryan.

An integral part of that first shuttle flow will be a static test firing of the orbiter's three main engines on Complex 39's Pad A. The static test firing will be held as a part of the Countdown Demonstration Test to be conducted approximately 50 days prior to launch.

The countdown demonstration is a dress rehearsal for launch and the shuttle's external tank will have a full flight load of liquid hydrogen and liquid oxygen aboard for the test.

The 470,000-pound thrust engines will begin the 20-second firing at 100 percent throttle. The throttle settings will be reduced to 92 percent momentarily and then be brought back up to 100 percent for the burn's end. Some 16,000 gallons of liquid hydrogen and 5,300 gallons of liquid oxygen will be consumed during the test firing.

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After the firing is completed, the remaining propellants in the large external tank will be unloaded. A day or so later, the terminal portions of the countdown will be repeated with an astronaut crew aboard the orbiter but without propellants in the tank.

There will be no static test firing of the Space Shuttle's twin solid rocket boosters as there is no way to shut them down once the ignition sequence has been started.

Unless major problems develop, the Space Shuttle will not be returned to the Vehicle Assembly Building prior to launch.

Next year's Space Shuttle launch will be the first of six planned for the Orbital Flight Test series which will precede the shuttle's operational phase. Orbiter landings in the first four missions will be made at the Dryden Flight Research Center in California. Landings will be made on KSC's Shuttle Landing Facility northwest of the Vehicle Assembly Building beginning with the fifth mission.

No payload will be carried on the first Space Shuttle mission. Payloads to be carried on subsequent missions through the first 10 flights include Spacelab pallets, Tracking and Data Relay satellites, Geostationary Operational Environmental Satellites for the National Oceanic and Atmospheric Administration, commercial communications satellites and communications satellites for Canada and India.

When the Space Shuttle becomes operational, it will replace all of NASA's expendable launch vehicles with the exception of the relatively small Scout, used for light payloads.

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